

SOUTHWEST FISHERIES SCIENCE CENTER

NATIONAL MARINE FISHERIES SERVICE - SOUTHWEST FISHERIES SCIENCE CENTER - LA JOLLA LABORATORY

AUGUST 2005

**PACIFIC HARBOR SEAL, *Phoca vitulina richardsi*,
CENSUS IN CALIFORNIA DURING MAY-JULY 2004**

by

Mark S. Lowry, James V. Carretta, and Karin A. Forney

ADMINISTRATIVE REPORT LJ-05-06

"This report is used to ensure prompt dissemination of preliminary results, interim reports, and special studies to the scientific community. The material is not ready for formal publication since the paper may later be published in a modified form to include more recent information or research results. Abstracting, citing, or reproduction of this information is not allowed. Contact author if additional information is required."

PACIFIC HARBOR SEAL,
Phoca vitulina richardsi,
CENSUS IN CALIFORNIA DURING MAY-JULY 2004

Mark S. Lowry^a, James V. Carretta^a, and Karin A. Forney^b

^aNational Marine Fisheries Service
Southwest Fisheries Science Center
8604 La Jolla Shores Drive
La Jolla, CA 92037
mark.lowry@noaa.gov
jim.carretta@noaa.gov

^bNational Marine Fisheries Service
Southwest Fisheries Science Center
110 Shaffer Road
Santa Cruz, CA 95060
karin.forney@noaa.gov

ABSTRACT

An aerial photographic census of Pacific harbor seals (*Phoca vitulina richardsi*) was conducted in California 18 May-19 July 2004 to document the number of seals hauled out during the molt period. To compensate for latitudinal differences in the timing of the molt, the state of California was divided into three sections and each section was surveyed on different dates. The three sections were: (1) Channel Islands and mainland coast of southern California from the U.S./Mexico border to Pismo Beach, (2) central California from Pismo Beach to Point Reyes and San Francisco Bay estuary, and (3) northern California from Point Reyes to the California/Oregon border. Aerial photographic surveys at the Channel Islands and the mainland coast of southern California occurred during the afternoon high-low tide cycle on 18-20 May and 1-3 June at tide levels of 0.43 m to 0.88 m and 0.40 m to 0.73 m, respectively. Surveys in central California occurred during the low-low tide cycle at tide levels of -0.03 m to 0.49 m on 22-25 June. Surveys in northern California occurred during the low-low tide cycle at tide levels of -0.34 m to 0.43 m on 5-9 July and 18-19 July (except at South Humboldt Bay, Eel River, and Cape Mendocino where tide levels were 0.49 m to 0.52 m, 0.89 m, and 0.98 m, respectively). Color transparency photographs of harbor seals were taken with a 126-mm-format camera equipped with image motion compensation. The latitude and longitude of each photograph was recorded by linking the camera to a computer and Global Positioning System (GPS). Two to three observers searched for hauled-out seals. Seals were photographed as the aircraft was flown over the coastline at 213 m (700 ft). A total of 563 haulout sites within the state of California were found during complete surveys conducted at a mean tide level of 0.28 m (-0.46 m to 0.98 m). At the Channel Islands there were 4,344 seals counted onshore, along the mainland coast of California and San Francisco Bay estuary there were 21,989, and statewide there were 26,333. The mainland coast of California was stratified into nineteen 0.5-degree latitude segments with counts from the San Francisco Bay estuary making up the twentieth stratum. Stratum 37.50E to 37.99E had the most seals ($n = 3,360$) and the most seals at a single haulout site ($n = 939$). Stratum 40.50E to 40.99E had the highest median (104) and mean (178.4) number of seals per haulout. Of the eight Channel Islands in southern California, Santa Cruz Island had the most seals ($n = 1,102$) and Santa Barbara Island the fewest ($n = 12$). Total 2004 counts were greater than 2002 counts at mainland sites, but counts at the Channel Islands were relatively stable.

INTRODUCTION

Pacific harbor seals (*Phoca vitulina richardsi*) are widely distributed along the mainland coast, islands and bays of California. The California Department of Fish and Game (CDFG) conducted annual aerial photographic surveys of harbor seals in California during the pre-molt and molt period (when the greatest numbers of seals were expected to be hauled out) from early June to early July during 1982-1995 (Hanan 1996, Fluharty 1999). Seals were counted from near-vertical aerial color-transparency photographs taken with a 70-mm-format Hasselblad camera as the aircraft flew over the coastline at an altitude of 183-213 m (600-700 ft). The National Marine Fisheries Service (NMFS), Southwest Fisheries Science Center (SWFSC) conducted a census in 2002 (Lowry and Carretta 2003) from photographs taken vertically with a 126-mm-format military reconnaissance camera equipped with image motion compensation. This report describes methods and results of a similar harbor seal census in California conducted by SWFSC during May-July 2004.

METHODS

Field methods

Aerial surveys were scheduled to photograph seals during the peak of their molt when the greatest fraction of seals would be ashore. The state of California was divided into three sections (Figure 1) to adjust for latitudinal differences in the timing of the molt by harbor seals (inferred from latitudinal timing of the reproductive period [Tempte et al. 1991]): (1) Channel Islands and mainland coast of southern California from the U.S./Mexico border (32.533°N, 117.117°W) to Pismo Beach (35.139°N, 120.645°W), (2) central California from Pismo Beach to Point Reyes

(37.995EN, 123.023EW) and San Francisco Bay, and (3) northern California from Point Reyes to the California/Oregon border (42.000EN, 124.212EW).

Aerial photographic surveys of harbor seals at the Channel Islands and the mainland coast of southern California were scheduled during the lowest tide cycle in the afternoon (high-low tide [0.40 m to 0.88 m]) in late-May through mid-June when previous studies at the Channel Islands determined that the greatest number of harbor seals were hauled out (Stewart and Yochem 1994). Surveys in central California were scheduled during mid-to-late June during low-low tide cycle at tide levels of 0.31 m or less (this level was raised to 0.46 m due to delays caused by low stratus [i.e., fog]) based on recommendations made at the California harbor seal abundance workshop (Barlow 2002). Surveys in northern California were scheduled in early-July through late-July during low-low tide levels of 0.31 m or less (this level was raised to 0.46 m due to delays caused by low stratus clouds, [but was exceeded for south Humboldt Bay, Eel River, and Cape Mendocino where tide levels were 0.49 m to 0.52 m, 0.89 m, and 0.98 m, respectively]) based on recommendations made at the California harbor seal abundance workshop (Barlow 2002). Surveys were scheduled after 0800 hours when light conditions were optimal for locating and photographing seals.

A twin-engine, high-wing Partenavia PN68-observer model aircraft (offering excellent forward and downward visibility) was flown at a ground speed of 185 km/h (100 kts) and an altitude of 213 m (700 ft) above sea level (ASL), except at Humboldt Bay where the altitude was 244 m (800 ft) to limit disturbance to seals. During the survey, the aircraft was flown directly over the coastline or slightly offshore. Seals were photographed as the aircraft traveled over the coastline, or if the seals were out of lateral camera range or sighted too late to be photographed, the aircraft doubled back to photograph them. Multiple photographic passes were

made over large rocks or islands to ensure that the entire rock or island was photographed.

Harbor seals were photographed with a 126-mm-format Chicago Aerial Industries, Inc. KA-76 camera (mounted vertically inside the belly of the aircraft) equipped with image motion compensation (IMC) and operated at a cycle rate that achieved 67% overlap between adjacent frames. A 152 mm focal-length lens was used on the camera. The latitude and longitude of each photograph was recorded by linking the camera to a computer and Global Positioning System (GPS). Kodak Aerochrome HS Film SO-359, a very fine-grained, high-speed, color transparency film, was used. The camera was set at an aperture of f/4 or f/5.6 with a shutter speed between 1/400 and 1/2000 second.

The survey team consisted of two or three observers and the pilot. The observer in the right front seat looked for seals in front and to the right of the aircraft and directed the pilot to maneuver the aircraft over the seals. The right seat observer also operated a computer linked to a Garmin GPSMAP 76 GPS unit for tracking the aircraft on a topographic map displayed on the computer screen overlaid with all known harbor seal haulout sites (National Geographic Topographic Maps of California) and monitored tide levels displayed by the GPS to ensure that the survey was conducted at optimal tide levels. The second observer looked for seals under the aircraft from the belly viewing port located behind the camera, operated the camera when seals were sighted, and recorded notes onto a second computer linked to a Garmin GPS 12XL and the camera. The third observer (when available) was seated behind the pilot on the left side of the aircraft and looked for seals to the left and below the aircraft. To optimize the time available for surveying under proper tidal conditions and to cover as much distance as possible during that day's survey, the pilot flew the aircraft over the coastline so that seals could be photographed as much as possible while the survey was underway.

Aerial surveys were conducted on 18-20 May and 1-3 June in southern California and Channel Islands, on 22-25 June in central California and San Francisco Bay estuary, and, on 5-9 July and 18-19 July in northern California (Table 1). Ground surveys were conducted at Southeast Farallon Islands on 24 June and 6 July (pers. comm. Russ Bradley, Point Reyes Bird Observatory, 6 July 2004), at Tomales Point and Tomales Bay on 25 June, 4 July, and 23 July (pers. comm. Brooke Sommerfeldt, Point Reyes National Seashore, 28 July 2004), and at Bodega Head on 19 July by the aerial survey team (Table 1). Tide height for each haulout photographed during the surveys and the mean lower low water datum reference (MLLW) was determined using the program WTides (freeware obtained at <http://www.mdr.co.nz/>).

Count methods

Harbor seal images were counted through a 7-70X zoom binocular microscope as the photographs were illuminated on a light table. Images of animals were marked on a clear acetate overlay with a colored pen as each was counted. Marks on the acetate were compared and verified with partially overlapping photographs. If all animals could not be counted in one photograph, the overlapping portion of the overlay was aligned on an adjacent photograph and the count continued. One count was made for each rock, island, or mainland haulout site. Seals in the water were tabulated separately. Haulout sites were defined as groups of seals or single seals found either on a rock, a group of rocks, or in a cove, and a single latitude and longitude was assigned to each haulout site.

Counts were tabulated by 0.5° latitude intervals for mainland sites, San Francisco Bay estuary, and for each of the Channel Islands. Summary statistics were compiled for each group interval.

RESULTS

Two counts were obtained for some segments of the state because of replicate survey coverage at the following areas: (1) northern Channel Islands (Anacapa Island, Santa Cruz Island, Santa Rosa Island, and San Miguel Island), (2) Mugu Lagoon along the southern California mainland coast, (3) the mainland coast at Estero Bay and just north of Point Piedras Blancas in central California, (4) the mainland coast from Manchester Beach State Park to Bridgeport just north of Point Arena in northern California, (5) ground counts at Southeast Farallon Islands on two dates, and (6) ground counts at Tomales Point and Tomales Bay on three dates.

We determined that the best data would include the counts from the lower tide level for the Channel Islands (2-3 June 2004), the flights that included the longest stretch of coastline coverage (18 May 2004 for Mugu Lagoon, 25 June 2004 for central California, 9 July 2004 for the area north of Point Arena), and the nearest date to aerial surveys for ground counts at Southeast Farallon Islands (24 June 2004) and Tomales Point and Tomales Bay (25 June 2004). However, all counts are being provided (Tables 2-5, Appendices 1 and 2) to indicate variance in counts that were obtained, with the caveat that the second count is not a replicate count for the entire state or segment of coastline.

Along the mainland coast of California and San Francisco Bay estuary there were 21,989 seals counted onshore at 430 haulout sites (partial replicate count obtained was 21,838 seals at 433 haulout sites; Tables 2 and 5, Figures 2 and 3). In the Channel Islands there were 4,344 seals counted onshore at 133 haulout sites (partial replicate count obtained was 2,980 seals at 134 haulout sites; Tables 3 and 5, Figures 2 and 3). Statewide, a total of 26,333 seals were counted

hauled out of the water at 563 haulout sites (partial replicate count obtained was 24,818 seals at 567 haulout sites; Tables 4 and 5, Figures 2 and 3). On average there were 51.1 seals per haulout site along the mainland coast of California (partial replicate count averaged 50.4 seals), 32.7 seals per haulout site at the Channel Islands (partial replicate count averaged 22.2 seals), and 46.8 seals per haulout site statewide (partial replicate count averaged 43.8 seals; Tables 2-5, Figure 4).

The counts of harbor seals at the mainland coast of California were stratified into nineteen 0.5 degree latitude-segments, with counts from the San Francisco Bay estuary making up a twentieth stratum (Table 2). Stratum 37.50E to 37.99E had the most seals (n = 3,360) and the most seals at a single haulout site (n = 939). Stratum 40.50E to 40.99E had the highest median and mean number of seals per haulout (104 and 178.4, respectively). Stratum 38.50E to 38.99E had the highest number of haulout sites (n = 59).

The counts of harbor seals at the Channel Islands in southern California were stratified for each island (Table 3). Santa Cruz Island had the most seals (n =1,102) and Santa Barbara Island the fewest (n = 12). Santa Cruz Island had the highest median and mean number of seals per haulout (27.5 and 42.4, respectively). San Miguel Island had the most haulout sites (n = 39).

The median tide height was 0.580 m for the Channel Islands surveys (0.73 m for the replicate survey, Tables 3 and 5), 0.15 m for California mainland total (Table 2), and 0.27 m for the entire state (0.24 m for the replicate survey-count, Tables 4 and 5).

DISCUSSION

The population of harbor seals in the state of California appears to be increasing (contrary to indications from the 2002 survey), but the rate of increase appears to be lower than it was in

the 1980's and 1990's (Figure 2). However, harbor seal counts at the Channel Islands show no noticeable increase from counts obtained during the early-to-mid 1990's (Hanan 1996, Fluharty 1999, Read and Roberts 2001). The number of haulout sites found statewide in 2004 ($n = 563$) were higher than 2002 ($n = 467$), but were comparable to the number of sites found during the early-to-mid 1990's (Figure 3). The average number of seals found per haulout site in 2004 increased from the 2002 value and continues to be greater than previous years for mainland haulout sites (Figure 3). However, the average number of seals found per haulout site is less for Channel Islands sites. Possible reasons for these discrepancies could be due to (1) differences in defining haulout sites between researchers, or (2) change in haulout behavior of seals. Although survey date is another possibility because the number of harbor seals on land differs throughout the year, our surveys were conducted during comparable dates to those conducted by CDFG.

Conducting the survey at low-low tide levels of 0.31 m or less was very difficult to accomplish because these tides occurred during morning hours when low stratus clouds were commonly present. In order to complete the survey the maximum acceptable tide level was raised to 0.46 m. This limit was, however, exceeded for South Bay (Humboldt Bay), the mouth of the Eel River, and Cape Mendocino due to a required refueling stop while the tide was rising and a lack of weather opportunities to repeat these areas. The census in South Bay (Humboldt Bay) and at the mouth of the Eel River was not compromised because the tidal flats where seals were hauled out were exposed and many seals were present.

Haulout counts are not a complete census of the population during the peak molt season because some seals are foraging at sea. Radio tag studies have been used to estimate the proportion of animals on land. Unfortunately, the majority of these studies (reviewed in Boveng 1988) documented the proportion of seals on land for extended periods of time during the day,

not at an instantaneous time (as would occur when an aircraft flies over during aerial surveys), and some proportions were estimated during months that seals were not molting. Three studies have been made to estimate the proportion of seals on land during aerial surveys (Hanan 1996, Huber et al. 2001, and Harvey and Goley 2005). The estimated a correction factor (1.53) in Huber et al. (2001) is probably not appropriate for our counts because that study was done in the pupping season and was north of our study area. For the California stock of harbor seals, a correction factor of 1.3, derived from data of radio tagged seals collected by D. Hanan (Barlow et al. 1997, Hanan 1996), has been used for estimating total abundance of harbor seals in California from counts obtained at haulouts (Carretta et al. 2001). Multiplying 26,333 (our best total count of the number of seals counted onshore at haulouts in 2004) by the 1.3 correction factor results in a total harbor seal population estimate of 34,232 in California. Concurrent with the 2004 census was a study for deriving a correction factor from 120 seals that were tagged with radios in central and northern California (Harvey and Goley 2005). This latter study derived a correction factor of 1.65 that is more appropriate for estimating population size than the previous 1.3 correction factor. By multiplying 26,333 with the 1.65 correction factor, we estimate that there were 43,449 harbor seals in California in 2004.

ACKNOWLEDGMENTS

We are grateful to Dan Richards of Channel Islands National Park and to Carolina Bonin of the Southwest Fisheries Science Center (SWFSC) for assisting us during our surveys. Aspen Helicopters, Oxnard, California, provided aircraft support, and Rick Throckmorton, Kevin Kintz, Ed Saenz, and Diana Fedderson were the pilots. We are also indebted to Wayne Perryman of the SWFSC for providing his camera equipment, and to Morgan Lynn of the SWFSC for

maintaining the camera. We thank Bill Sydeman and Russ Bradley of PRBO Conservation Science, and Sarah Allen and Beth Sammerfeldt for sharing their harbor seal count data. The research was conducted under Marine Mammal Research Permit No. 774-1714 and National Marine Sanctuary Permit No. MULTI-2002-003. The manuscript was reviewed by Jay Barlow.

LITERATURE CITED

- Barlow, J. 2002. Report of the California harbor seal workshop, March 28-29, 2002, Southwest Fisheries Science Center. *Can be obtained from:* Jay Barlow, National Marine Fisheries Service, Southwest Fisheries Science Center, 8604 La Jolla Shores Drive, La Jolla, CA 92037.
- Barlow, J., K. A. Forney, P. Scott Hill, R. L. Brownell Jr., J. V. Carretta, D. P. DeMaster, F. Julian, M. S. Lowry, T. Ragen, R. and R. Reeves. 1997. U.S. Pacific marine mammal stock assessments: 1996. NOAA Technical Memorandum NMFS, NOAA-TM-NMFS-SWFSC-248. 223 pp.
- Boveng, P. 1988. Status of the Pacific harbor seal population on the U.S. west coast. Administrative Report LJ-88-06, Southwest Fisheries Center, La Jolla, California. 43 pp.
- Carretta, J. V., J. Barlow, K. A. Forney, M. M. Muto, and J. Baker. 2001. U.S. Pacific marine mammal stock assessments: 2001. NOAA Technical Memorandum: NOAA-TM-NMFS-SWFSC-307. 280 pp.
- Fluharty, M. J. 1999. Summary of Pacific harbor seal, *Phoca vitulina richardsi*, surveys in California, 1982-1995. California Department of Fish and Game, Marine Region Administrative Report 99-1. 49 pp.
- Hanan, D. A. 1996. Dynamics of abundance and distribution for Pacific harbor seals, *Phoca*

- vitulina richardsi*, on the coast of California. PhD Dissertation, University of California, Los Angeles. 158 pp.
- Harvey, J. T. and D. Goley. 2005. Determining a correction factor for aerial surveys of harbor seals in California. Final Report to National Marine Fisheries Service and Pacific States Marine Fisheries Commission, PSMFC Contracts No. 03-19 and 04-33, NOAA Grant No. NA17FX1603. 35 pp.
- Huber, H. R., S. J. Jeffries, R. F. Brown, R. L. DeLong, and G. VanBlaricom. 2001. Correcting aerial survey counts of harbor seals (*Phoca vitulina richardsi*) in Washington and Oregon. *Marine Mammal Science* 17:276-293.
- Lowry, M. S. and J. V. Carretta. 2003. Pacific harbor seal, *Phoca vitulina richardii*, census in California during May-July 2002. NOAA Technical Memorandum NMFS NOAA-TM-NMFS-SWFSC-353. 48p.
- Read, R and E. Roberts. 2001. Final report: Census/survey of harbor seals in California. Report submitted to Pacific States Marine Fisheries Commission. Available from Robert Read, California Department of Fish and Game, Marine Region, San Diego Field Office, 4949 Viewridge Avenue, San Diego, CA 92123.
- Stewart, B. S. and P. K. Yochem. 1994. Ecology of harbor seals in the Southern California Bight. In W. L. Halvorson and G. J. Maender (editors), *The Fourth California Islands Symposium: Update on the status of resources*, p. 123-134. Santa Barbara Museum of Natural History, Santa Barbara, CA.
- Tempte, J. L., M. A. Bigg, and Ø. Wiig. 1991. Clines revisited: The timing of pupping in the harbour seal (*Phoca vitulina*). *J. Zoology.*, London. 224:617-632.

Table 1. Dates of survey areas and tide height of areas surveyed for Pacific harbor seals (*Phoca vitulina richardsi*) within three sections of California during 18 May through 23 July 2004.

| Section | Survey area | Date | Tide height (m) |
|--|---|---|---|
| Southern California (including Channel Islands) | Point Mugu to Pismo Beach | 18 May 2004 | 0.52 to 0.61 |
| | Santa Barbara Island, San Nicolas Island, Santa Catalina Island, and California mainland coast from Point Loma to Point Mugu (except at Camp Pendleton and between Redondo Beach and Pacific Palisades) | 19 May 2004 | 0.79, 0.70 to 0.76, 0.43 to 0.46, and 0.55 to 0.67 |
| | Anacapa Island, Santa Cruz Island, Santa Rosa Island, and San Miguel Island | 20 May 2004 | 0.64 to 0.73, 0.64 to 0.88, 0.73 to 0.85, and 0.73 to 0.79 |
| | San Clemente Island | 1 June 2004 | 0.40 |
| | Santa Rosa Island and San Miguel Island | 2 June 2004 | 0.58 to 0.73 and 0.52 to 0.58 |
| | Anacapa Island and Santa Cruz Island | 3 June 2004 | 0.55 to 0.58 |
| Central California and San Francisco Bay estuary | Pismo Beach to Point San Luis | 22 June 2004 | 0.06 |
| | Pt. Buchon to Cayucos Point, north side of Point Piedras Blancas to Ragged Point, and Point Lopez to Needle Rock Point (NMFS, SWFSC Santa Cruz Lab) | 23 June 2004 | 0.06 to 0.09, 0.09, and 0.12 to 0.34 |
| | Needle Rock Point to Bolinas, and San Francisco Bay estuary | 24 June 2004 | 0.09 to 0.12, and 0.09 to 0.21 |
| | Bolinas to Point Reyes, Yerba Buena Island, Point Lopez to Point San Luis | 25 June 2004 | -0.03 to 0.34, 0.43, and 0.27 to 0.49 |
| | Obtained ground count for Southeast Farallon Islands from Russ Bradley, Point Reyes Bird Observatory | 24 June 2004 and 6 July 2004 | 0.09 and 0.03 |
| Northern California | Punta Gorda to Cape Mendocino, Mad River to California/Oregon border, Arcata Bay (Humboldt Bay), South Bay (Humboldt Bay), Eel River, and Cape Mendocino | 5 July 2004 | -0.34 to -0.31, -0.46 to -0.03, -0.06, 0.49 to 0.52, 0.89, and 0.98 |
| | Punta Gorda to north of Shelter Cove and Rockport to Jug Handle State Reserve | 7 July 2004 | -0.34 |
| | North of Shelter Cove to Rockport, Jug Handle State Reserve to Manchester State Beach (north of Point Arena) | 9 July 2004 | 0.03, and 0.40 |
| | Duncans Point (north of Bodega Head) to Bridgeport Landing, and Bodega Rock | 18 July 2004 | -0.06 to 0.31, and 0.43 |
| | Bodega Head (ground survey by aerial survey team) | 19 July 2004 | 0.18 to 0.37 |
| | Obtained ground count for Tomales Bay and Tomales Point from Sarah Allen and Brooke Sommerfeldt, Point Reyes National Seashore | 25 June 2004, 4 July 2004, and 23 July 2004 | 0.15 to 0.30, -0.2 to 1.04 and 0.21 to 0.74 |

Table 2. Summary statistics for the number of Pacific harbor seals (*Phoca vitulina richardsi*) counted onshore and tide height at haulout sites by 0.5 degree latitude increments for mainland coastal sites (see footnotes) and San Francisco Bay estuary from complete surveys conducted during 18 May-19 July 2004.

| Latitude range (stratum) or estuary | Total # of haulouts | Minimum # of seals per haulout | Maximum # of seals per haulout | Sum of seals from all haulouts | Median # of seals per haulout | Mean # of seals per haulout | Minimum tide height (m) | Maximum tide height (m) | Median tide height (m) | Mean tide height (m) |
|--|---------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|-----------------------------|-------------------------|-------------------------|------------------------|----------------------|
| 41.50° to 42.00° (S) | 17 | 3 | 513 | 1,047 | 27.0 | 61.6 | -0.27 | -0.03 | -0.15 | -0.16 |
| 41.00° to 41.49° (R) | 13 | 1 | 114 | 416 | 18.0 | 32.0 | -0.43 | -0.37 | -0.40 | -0.40 |
| 40.50° to 40.99° (Q) | 12 | 25 | 567 | 2,141 | 104.0 | 178.4 | -0.46 | 0.89 | 0.49 | 0.31 |
| 40.00° to 40.49° (P) | 12 | 5 | 155 | 525 | 31.0 | 43.8 | -0.34 | 0.98 | -0.31 | -0.06 |
| 39.50° to 39.99° (O) | 19 | 1 | 214 | 740 | 27.0 | 38.9 | 0.40 | 0.40 | 0.40 | 0.40 |
| 39.00° to 39.49° (N) | 28 | 1 | 229 | 1,522 | 34.5 | 54.4 | 0.09 | 0.46 | 0.43 | 0.33 |
| 38.50° to 38.99° (M) | 59 | 1 | 256 | 1,905 | 17.0 | 32.3 | -0.03 | 0.24 | 0.15 | 0.12 |
| 38.00° to 38.49° (L) | 27 | 1 | 315 | 1,295 | 14.0 | 48.0 | -0.06 | 0.43 | -0.03 | 0.08 |
| 37.50° to 37.99° ^{a, b} (K) | 26 | 2 | 939 | 3,360 | 40.5 | 129.2 | -0.03 | 0.34 | 0.09 | 0.16 |
| San Francisco Bay estuary ^b | 12 | 1 | 158 | 621 | 17.0 | 51.8 | 0.09 | 0.43 | 0.15 | 0.17 |
| 37.00° to 37.49° ^b (J) | 30 | 3 | 254 | 1,557 | 18.0 | 51.9 | 0.03 | 0.09 | 0.06 | 0.06 |
| 36.50° to 36.99° (I) | 52 | 1 | 239 | 2,127 | 24.0 | 40.9 | 0.12 | 0.34 | 0.15 | 0.17 |
| 36.00° to 36.49° (H) | 26 | 1 | 135 | 778 | 20.0 | 29.9 | 0.12 | 0.27 | 0.14 | 0.15 |
| 35.50° to 35.99° (G) | 36 | 1 | 288 | 1,292 | 20.5 | 35.9 | 0.31 | 0.37 | 0.31 | 0.32 |
| 35.00° to 35.49° (F) | 41 | 2 | 104 | 1,219 | 21.0 | 29.7 | 0.06 | 0.49 | 0.37 | 0.33 |
| 34.50° to 34.99° (E) | 4 | 1 | 26 | 50 | 11.5 | 12.5 | 0.52 | 0.52 | 0.52 | 0.52 |
| 34.00° to 34.49° (D) | 14 | 4 | 407 | 1,273 | 49.0 | 90.9 | 0.55 | 0.67 | 0.58 | 0.59 |
| 33.50° to 33.99° (C) | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 33.00° to 33.49° (B) | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 32.50° to 32.99° (A) | 2 | 35 | 86 | 121 | 60.5 | 60.5 | 0.55 | 0.55 | 0.55 | 0.55 |
| California mainland total | 430 | 1 | 939 | 21,989 | 24.5 | 51.1 | -0.46 | 0.98 | 0.15 | 0.18 |

^aSE Farallon Islands and Drake's Estero are included in latitude segments 37.50° to 37.99°.

^bSan Francisco Bay estuary is excluded in latitude segments 37.50° to 37.99° and 37.00° to 37.49°.

Table 3. Summary statistics for the number of Pacific harbor seals (*Phoca vitulina richardsi*) counted onshore and tide height at haulout sites of the Channel Islands in southern California from complete surveys conducted during 19-20 May and 1-3 June 2004.

| Island | Total # of haulouts | Minimum # of seals per haulout | Maximum # of seals per haulout | Sum of seals from all haulouts | Median # of seals per haulout | Mean # of seals per haulout | Minimum tide height (m) | Maximum tide height (m) | Median tide height (m) | Mean tide height (m) |
|-----------------------|---------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|-----------------------------|-------------------------|-------------------------|------------------------|----------------------|
| Anacapa Island | 6 | 10 | 81 | 173 | 17.5 | 28.8 | 0.55 | 0.58 | 0.56 | 0.56 |
| Santa Cruz Island | 26 | 3 | 150 | 1,102 | 27.5 | 42.4 | 0.55 | 0.58 | 0.55 | 0.56 |
| Santa Rosa Island | 26 | 1 | 160 | 972 | 21.5 | 37.4 | 0.58 | 0.73 | 0.67 | 0.67 |
| San Miguel Island | 39 | 1 | 182 | 1,004 | 13.0 | 25.7 | 0.52 | 0.58 | 0.55 | 0.55 |
| San Nicolas Island | 23 | 1 | 105 | 784 | 24.0 | 34.1 | 0.70 | 0.76 | 0.70 | 0.72 |
| Santa Barbara Island | 1 | 12 | 12 | 12 | 12.0 | 12.0 | 0.79 | 0.79 | 0.79 | 0.79 |
| Santa Catalina Island | 5 | 2 | 129 | 193 | 23.0 | 38.6 | 0.43 | 0.46 | 0.43 | 0.43 |
| San Clemente Island | 7 | 1 | 45 | 104 | 7.0 | 14.9 | 0.40 | 0.40 | 0.40 | 0.40 |
| Channel Islands total | 133 | 1 | 182 | 4,344 | 19.0 | 32.7 | 0.40 | 0.79 | 0.58 | 0.59 |

Table 4. Summary statistics for the number of Pacific harbor seals (*Phoca vitulina richardsi*) counted onshore and tide height at haulout sites for sections of California, and California statewide from complete surveys conducted during 18 May-19 July 2004.

| Section | Total # of haulouts | Minimum # of seals per haulout | Maximum # of seals per haulout | Sum of seals from all haulouts | Median # of seals per haulout | Mean # of seals per haulout | Minimum tide height (m) | Maximum tide height (m) | Median tide height (m) | Mean tide height (m) |
|----------------------------|---------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|-----------------------------|-------------------------|-------------------------|------------------------|----------------------|
| Northern CA total | 187 | 1 | 567 | 9,591 | 25.0 | 51.3 | -0.46 | 0.98 | 0.12 | 0.11 |
| Central CA total | 223 | 1 | 939 | 10,954 | 23.0 | 49.1 | -0.03 | 0.49 | 0.15 | 0.21 |
| Southern CA total | 153 | 1 | 407 | 5,788 | 20.0 | 37.8 | 0.40 | 0.79 | 0.58 | 0.59 |
| Southern CA mainland total | 20 | 1 | 407 | 1,444 | 35.5 | 72.0 | 0.52 | 0.67 | 0.55 | 0.57 |
| California total | 563 | 1 | 939 | 26,333 | 23.0 | 46.8 | -0.46 | 0.98 | 0.27 | 0.28 |

Table 5. Summary statistics for the number of Pacific harbor seals (*Phoca vitulina richardsi*) counted onshore and tide height at haulout sites by 0.5 degree latitude increments for mainland coastal sites (see footnotes), San Francisco Bay estuary, each of the Channel Islands in southern California, sections of California, and California statewide from partial replicate surveys or complete replicate surveys conducted during 18 May-19 July 2004.

| Latitude range (stratum), estuary, island, or section | Total # of haulouts | Minimum # of seals per haulout | Maximum # of seals per haulout | Sum of seals from all haulouts | Median # of seals per haulout | Mean # of seals per haulout | Minimum tide height (m) | Maximum tide height (m) | Median tide height (m) | Mean tide height (m) |
|---|---------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|-----------------------------|-------------------------|-------------------------|------------------------|----------------------|
| 39.00° to 39.49° (N) | 30 | 1 | 229 | 1,443 | 29.5 | 48.1 | 0.09 | 0.46 | 0.37 | 0.31 |
| 37.50° to 37.99° ^{a, b} (K) | 26 | 2 | 939 | 3,387 | 40.5 | 130.3 | -0.03 | 0.34 | 0.09 | 0.16 |
| 35.50° to 35.99° (G) | 37 | 1 | 203 | 1,195 | 18.0 | 32.3 | 0.09 | 0.37 | 0.31 | 0.29 |
| 35.00° to 35.49° (F) | 41 | 1 | 104 | 1,248 | 25.0 | 30.4 | 0.06 | 0.49 | 0.37 | 0.29 |
| 34.50° to 34.99° (E) | 4 | 1 | 26 | 50 | 11.5 | 12.5 | 0.52 | 0.52 | 0.52 | 0.52 |
| 34.00° to 34.49° (D) | 14 | 4 | 396 | 1,262 | 49.0 | 90.1 | 0.55 | 0.70 | 0.58 | 0.59 |
| Anacapa Island | 9 | 1 | 81 | 162 | 10.0 | 18.0 | 0.64 | 0.73 | 0.64 | 0.65 |
| Santa Cruz Island | 29 | 1 | 67 | 599 | 14.0 | 20.7 | 0.64 | 0.89 | 0.64 | 0.73 |
| Santa Rosa Island | 28 | 1 | 97 | 605 | 16.0 | 21.6 | 0.73 | 0.85 | 0.76 | 0.77 |
| San Miguel Island | 32 | 1 | 65 | 521 | 10.0 | 16.3 | 0.73 | 0.79 | 0.76 | 0.76 |
| Channel Islands total | 134 | 1 | 129 | 2,980 | 14.0 | 22.2 | 0.40 | 0.89 | 0.73 | 0.71 |
| Northern CA Total | 189 | 1 | 567 | 9,512 | 25.0 | 50.3 | -0.46 | 0.98 | 0.12 | 0.11 |
| Central CA Total | 224 | 1 | 939 | 10,893 | 22.5 | 48.6 | -0.03 | 0.49 | 0.15 | 0.20 |
| Southern CA Total | 154 | 1 | 396 | 4,413 | 15.0 | 28.7 | 0.40 | 0.89 | 0.73 | 0.69 |
| Southern CA mainland total | 20 | 1 | 396 | 1,433 | 35.5 | 71.7 | 0.52 | 0.70 | 0.55 | 0.57 |
| California mainland total | 433 | 1 | 939 | 21,838 | 24.0 | 50.4 | -0.46 | 0.98 | 0.15 | 0.17 |
| California Total | 567 | 1 | 939 | 24,818 | 20.0 | 43.8 | -0.46 | 0.98 | 0.24 | 0.30 |

^aSE Farallon Islands and Drake's Estero are included in latitude segments 37.50° to 37.99°.

^bSan Francisco Bay estuary is excluded in latitude segments 37.50° to 37.99° and 37.00° to 37.49°.

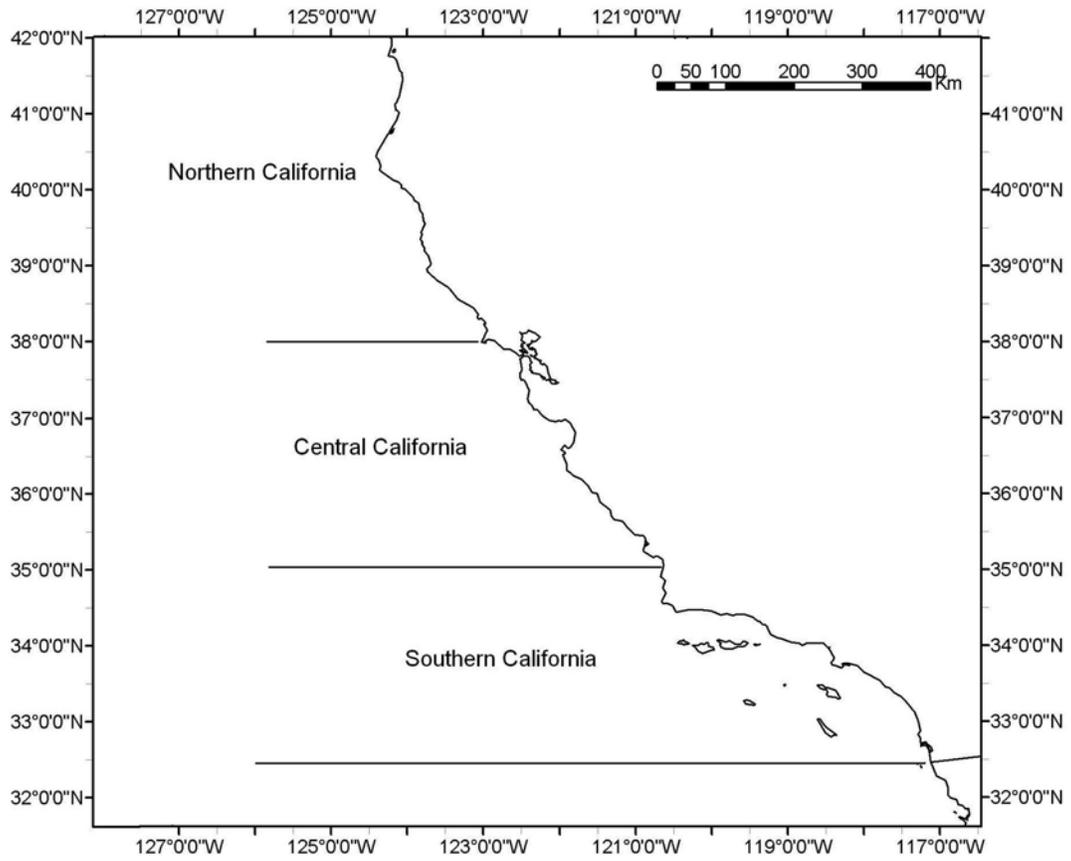


Figure 1. Three sections of California (southern, central, and northern) used to divide the state for offsetting surveys of Pacific harbor seals (*Phoca vitulina richardsi*) within the state.

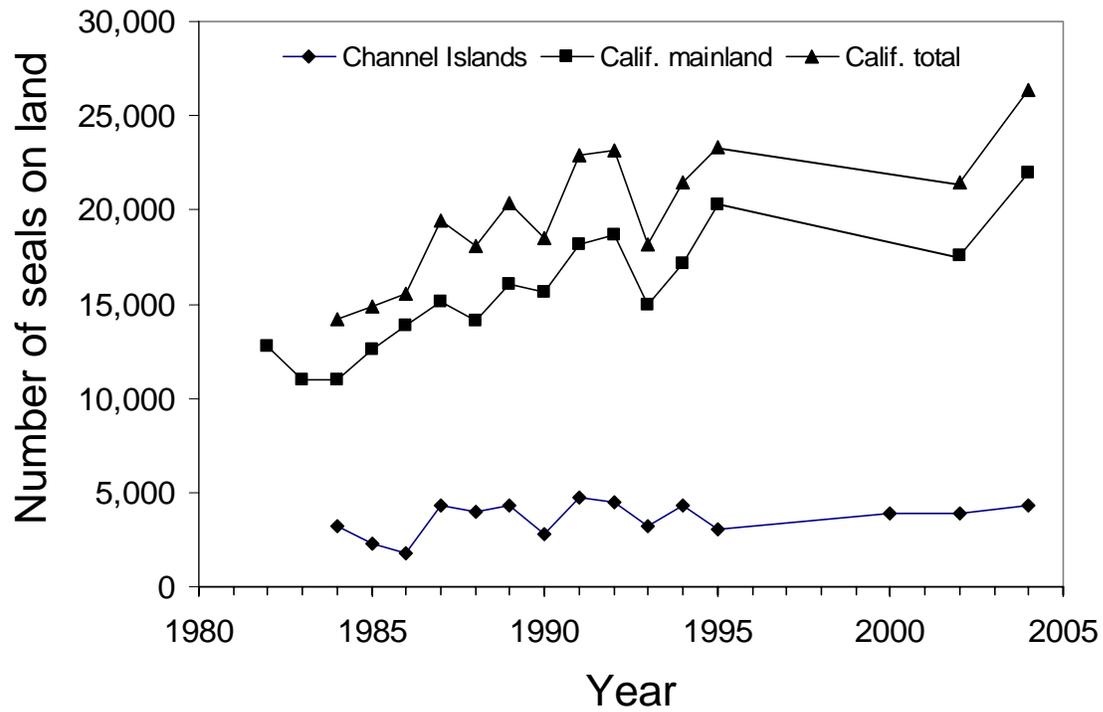


Figure 2. Counts of Pacific harbor seals (*Phoca vitulina richardsi*) during late-molt period in California for 1982-2004 (Hanan 1996, Fluharty 1999, Read and Roberts 2001, Lowry and Carretta 2003, and this study).

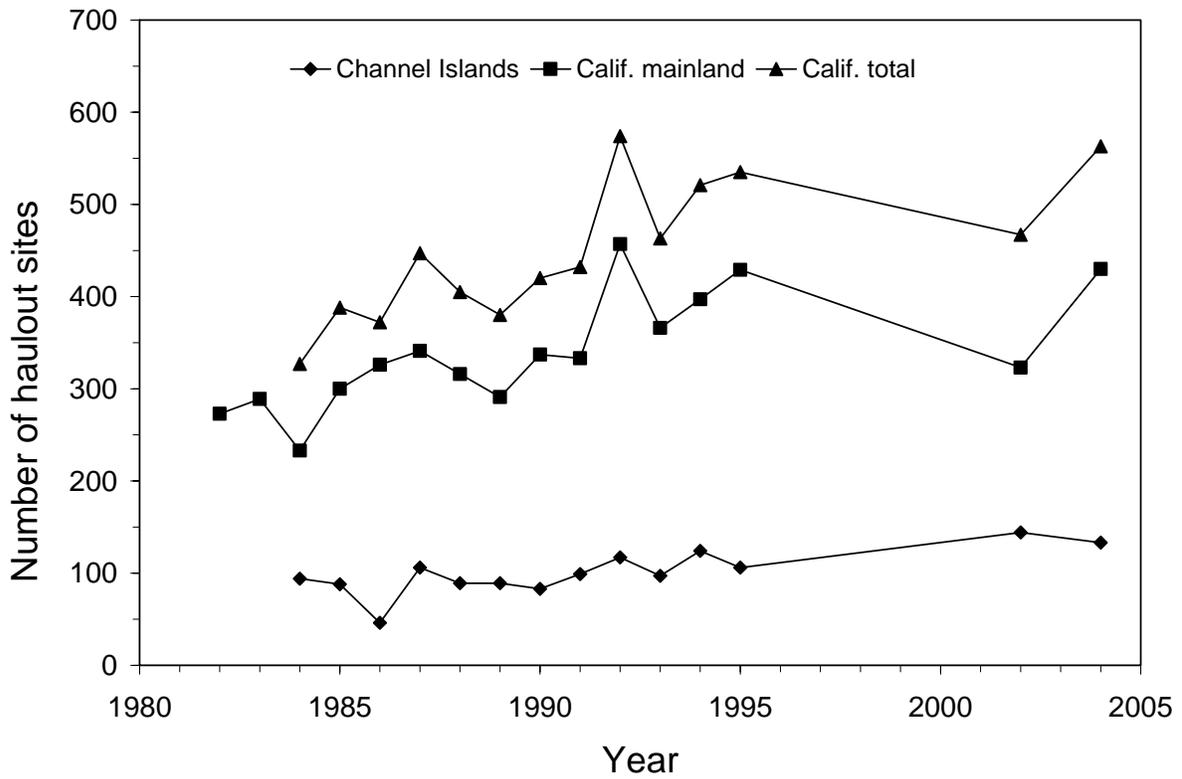


Figure 3. Number of Pacific harbor seal (*Phoca vitulina richardsi*) haulout sites found in California during annual aerial photographic surveys conducted during late-molt period (Hanan 1996, Fluharty 1999, Lowry and Carretta 2003, and this study).

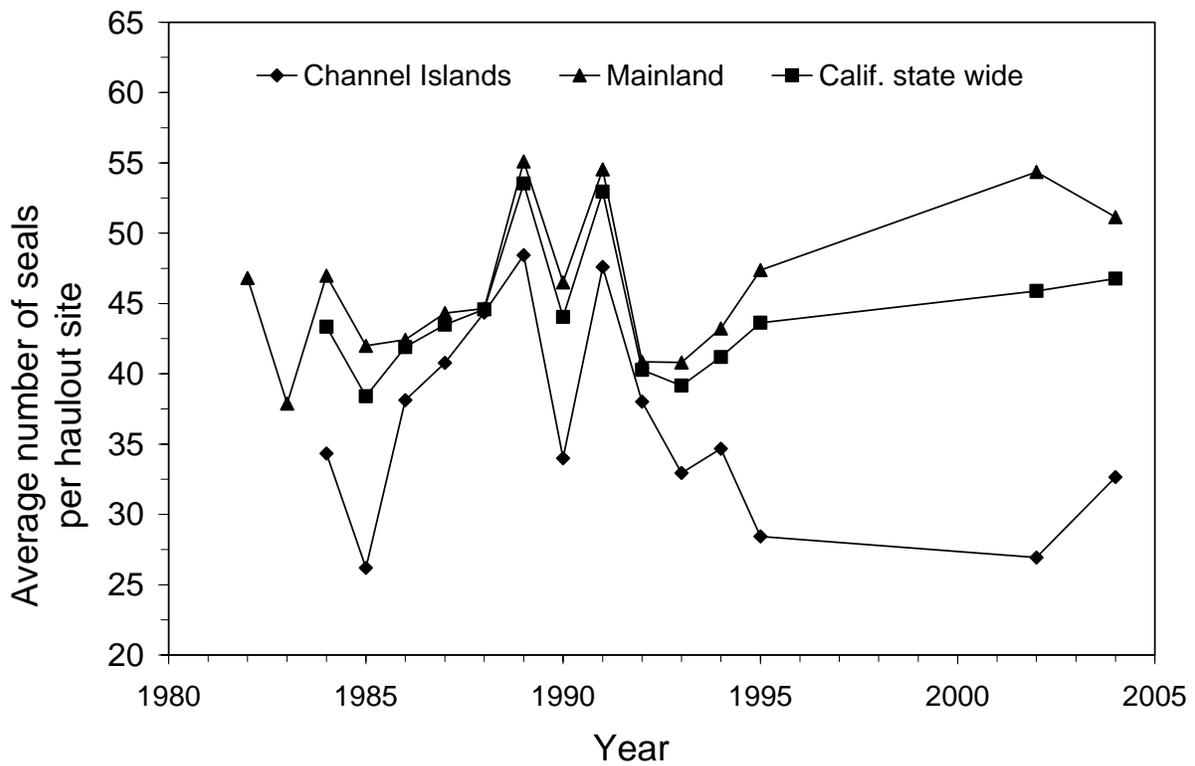


Figure 4. Average number of Pacific harbor seals (*Phoca vitulina richardsi*) per haulout site found in California during annual surveys conducted during late-molt period (Hanan 1996, Fluharty 1999, Lowry and Carretta 2003, and this study).

Appendix 1. Counts of harbor seals (*Phoca vitulina*) by biologists on the ground at Southeast Farallon Islands, Tomales Point, Tomales Bay, and Bodega Head, and obtained from 126-mm-format aerial color photographs taken at haulout sites in California during 18 May to 19 July 2004. GPS Data Format Deg NAD83. SE Farallon Islands and Drake's Estero are included in stratum K (latitude segments 37.50° to 37.99°). San Francisco Bay estuary is excluded from Stratum J and K (latitude segments 37.00° to 37.49° and 37.50° to 37.99°).

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|---------------------|----------------------|-------------|---------|--|----------|--------------|-----------------|------------------------|-------------------------|
| 41.765 | 124.244 | Northern CA | S | Vicinity of Castle Rock, Crescent City | 5-Jul-04 | 10:49 | -0.03 | 61 | 1 |
| 41.763 | 124.244 | Northern CA | S | Vicinity of Castle Rock, Crescent City | 5-Jul-04 | 10:39 | -0.03 | 109 | 4 |
| 41.746 | 124.205 | Northern CA | S | Crescent City | 5-Jul-04 | 10:38 | -0.09 | 13 | |
| 41.749 | 124.219 | Northern CA | S | Vicinity of Castle Rock, Crescent City | 5-Jul-04 | 10:46 | -0.03 | 513 | 3 |
| 41.744 | 124.184 | Northern CA | S | Floating marina, Crescent City | 5-Jul-04 | 10:36 | -0.12 | 57 | |
| 41.691 | 124.144 | Northern CA | S | 0.7 Km S of Enderts Beach | 5-Jul-04 | 10:33 | -0.12 | 46 | 1 |
| 41.673 | 124.142 | Northern CA | S | 2.7 Km S of Enderts Beach | 5-Jul-04 | 10:32 | -0.15 | 49 | 3 |
| 41.633 ^a | 124.117 ^a | Northern CA | S | ?km NW of Klamath River ^a | 5-Jul-04 | 10:28 | -0.15 | 3 | |
| 41.617 ^a | 124.114 ^a | Northern CA | S | ?km NW of Klamath River ^a | 5-Jul-04 | 10:26 | -0.15 | 3 | |
| 41.600 ^a | 124.101 ^a | Northern CA | S | ?km NW of Klamath River ^a | 5-Jul-04 | 10:23 | -0.18 | 27 | |
| 41.583 ^a | 124.099 ^a | Northern CA | S | ?km NW of Klamath River ^a | 5-Jul-04 | 10:22 | -0.21 | 8 | 1 |
| 41.573 | 124.100 | Northern CA | S | 3.4 km NW of Klamath River | 5-Jul-04 | 10:21 | -0.21 | 39 | 1 |
| 41.571 | 124.102 | Northern CA | S | 3.2 km NW of Klamath River | 5-Jul-04 | 10:18 | -0.24 | 14 | |
| 41.568 | 124.101 | Northern CA | S | 2.7 km NW of Klamath River | 5-Jul-04 | 10:17 | -0.24 | 25 | |
| 41.566 | 124.100 | Northern CA | S | 2.6 km NW of Klamath River | 5-Jul-04 | 10:20 | -0.21 | 12 | |
| 41.555 | 124.094 | Northern CA | S | 1.4 km NW of Klamath River | 5-Jul-04 | 10:17 | -0.24 | 58 | 2 |
| 41.502 | 124.078 | Northern CA | S | 1.1 km NNE of Split Rock | 5-Jul-04 | 10:12 | -0.27 | 10 | |
| 41.135 | 124.163 | Northern CA | R | 0.3 km S of rocky Point | 5-Jul-04 | 9:51 | -0.37 | 103 | 2 |
| 41.128 | 124.164 | Northern CA | R | Palmers Point | 5-Jul-04 | 9:51 | -0.37 | 114 | |
| 41.126 | 124.163 | Northern CA | R | 0.6 km SSE of Palmers Point | 5-Jul-04 | 9:51 | -0.37 | 18 | |
| 41.126 | 124.166 | Northern CA | R | Palmers Point | 5-Jul-04 | 9:48 | -0.40 | 1 | |
| 41.124 | 124.161 | Northern CA | R | 0.7 km SSE of Palmers Point | 5-Jul-04 | 9:51 | -0.37 | 10 | |
| 41.070 | 124.160 | Northern CA | R | 0.4 km N of Elk Head | 5-Jul-04 | 9:43 | -0.40 | 38 | |
| 41.057 | 124.158 | Northern CA | R | 0.8 km NE of Trinidad Head | 5-Jul-04 | 9:43 | -0.40 | 25 | |
| 41.057 | 124.144 | Northern CA | R | 0.8 km E of Trinidad Head | 5-Jul-04 | 9:38 | -0.43 | 6 | |
| 41.056 | 124.144 | Northern CA | R | 0.8 km E of Trinidad Head | 5-Jul-04 | 9:38 | -0.43 | 6 | |
| 41.056 | 124.141 | Northern CA | R | 0.8 km E of Trinidad Head | 5-Jul-04 | 9:38 | -0.43 | 3 | |
| 41.054 | 124.137 | Northern CA | R | 1.2 km E of Trinidad Head | 5-Jul-04 | 9:38 | -0.43 | 25 | |
| 41.051 | 124.130 | Northern CA | R | 1.8 km ESE of Trinidad Head | 5-Jul-04 | 9:38 | -0.43 | 49 | |
| 41.043 | 124.124 | Northern CA | R | 2.1 km ESE of Trinidad Head | 5-Jul-04 | 9:38 | -0.43 | 18 | |
| 40.949 | 124.132 | Northern CA | Q | 0.8 km S of Mad River mouth | 5-Jul-04 | 9:32 | -0.46 | 98 | |
| 40.839 | 124.160 | Northern CA | Q | Arcata Bay, Humboldt Bay | 5-Jul-04 | 11:43 | -0.06 | 325 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|---------|--------------------------------------|----------|--------------|-----------------|------------------------|-------------------------|
| 40.838 | 124.112 | Northern CA | Q | Arcata Bay, Humboldt Bay | 5-Jul-04 | 11:46 | -0.06 | 113 | 4 |
| 40.813 | 124.146 | Northern CA | Q | Arcata Bay, Humboldt Bay | 5-Jul-04 | 11:44 | -0.06 | 25 | |
| 40.703 | 124.227 | Northern CA | Q | South Bay, Humboldt Bay | 5-Jul-04 | 12:26 | 0.52 | 110 | |
| 40.702 | 124.255 | Northern CA | Q | South Bay, Humboldt Bay | 5-Jul-04 | 12:25 | 0.49 | 48 | |
| 40.701 | 124.237 | Northern CA | Q | South Bay, Humboldt Bay | 5-Jul-04 | 12:29 | 0.49 | 179 | 1 |
| 40.700 | 124.236 | Northern CA | Q | South Bay, Humboldt Bay | 5-Jul-04 | 12:28 | 0.52 | 90 | |
| 40.699 | 124.229 | Northern CA | Q | South Bay, Humboldt Bay | 5-Jul-04 | 12:27 | 0.52 | 55 | |
| 40.698 | 124.240 | Northern CA | Q | South Bay, Humboldt Bay | 5-Jul-04 | 12:26 | 0.52 | 567 | |
| 40.647 | 124.308 | Northern CA | Q | Mouth of Eel River | 5-Jul-04 | 12:32 | 0.49 | 487 | 9 |
| 40.447 | 124.408 | Northern CA | P | 0.9 km N of Cape Mendocino | 5-Jul-04 | 12:39 | 0.88 | 36 | |
| 40.330 | 124.355 | Northern CA | P | Hair Seal Rock | 5-Jul-04 | 9:06 | -0.31 | 20 | |
| 40.328 | 124.356 | Northern CA | P | Hair Seal Rock | 5-Jul-04 | 9:04 | -0.31 | 26 | |
| 40.326 | 124.354 | Northern CA | P | Hair Seal Rock | 5-Jul-04 | 9:04 | -0.31 | 13 | |
| 40.320 | 124.353 | Northern CA | P | 0.6 km S of Hair Seal rock | 5-Jul-04 | 9:04 | -0.31 | 38 | |
| 40.271 | 124.365 | Northern CA | P | 1.1 km N of Punta Gorda | 5-Jul-04 | 9:02 | -0.31 | 55 | |
| 40.249 | 124.353 | Northern CA | P | Vicinity of Punta Gorda Lighthouse | 5-Jul-04 | 9:00 | -0.31 | 155 | 4 |
| 40.247 | 124.349 | Northern CA | P | Vicinity of Punta Gorda Lighthouse | 5-Jul-04 | 8:59 | -0.34 | 5 | |
| 40.175 | 124.238 | Northern CA | P | 12.7 km SE of Punta Gorda Lighthouse | 5-Jul-04 | 8:51 | -0.34 | 6 | |
| 40.159 | 124.216 | Northern CA | P | 0.4 km NW of Big Creek | 7-Jul-04 | 10:39 | -0.34 | 22 | |
| 40.029 | 124.079 | Northern CA | P | 1.2 km NW of Point Delgada | 9-Jul-04 | 10:53 | 0.03 | 80 | 7 |
| 40.006 | 124.030 | Northern CA | P | 0.33 km NW of Chamise Creek | 9-Jul-04 | 11:39 | 0.43 | 69 | |
| 39.993 | 124.017 | Northern CA | O | 1.5 km SE of Chamise Creek | 9-Jul-04 | 11:40 | 0.40 | 1 | |
| 39.912 | 123.941 | Northern CA | O | Bear Harbor | 9-Jul-04 | 11:43 | 0.40 | 64 | |
| 39.865 | 123.909 | Northern CA | O | 0.8 km NNW of Mistake Point | 9-Jul-04 | 11:45 | 0.40 | 30 | 4 |
| 39.856 | 123.900 | Northern CA | O | 0.8 km SE of Mistake Point | 9-Jul-04 | 11:49 | 0.40 | 11 | |
| 39.853 | 123.892 | Northern CA | O | 1.4 km SE of Mistake Point | 9-Jul-04 | 11:49 | 0.40 | 43 | |
| 39.837 | 123.861 | Northern CA | O | 4.6 km SE of Mistake Point | 9-Jul-04 | 11:51 | 0.40 | 1 | |
| 39.763 | 123.839 | Northern CA | O | 0.6 km N of Soldier Frank Point | 9-Jul-04 | 11:55 | 0.40 | 2 | |
| 39.756 | 123.838 | Northern CA | O | 0.3 km N of Soldier Frank Point | 9-Jul-04 | 11:56 | 0.40 | 13 | |
| 39.742 | 123.837 | Northern CA | O | 1.0 km N of Rockport Bay | 9-Jul-04 | 11:56 | 0.40 | 6 | |
| 39.730 | 123.831 | Northern CA | O | Rockport Bay | 9-Jul-04 | 11:58 | 0.40 | 25 | |
| 39.693 | 123.798 | Northern CA | O | 2.7 km N of Abalone Point | 9-Jul-04 | 11:59 | 0.40 | 28 | |
| 39.632 | 123.786 | Northern CA | O | 0.4 km N of Bell Point | 9-Jul-04 | 12:01 | 0.40 | 109 | 1 |
| 39.607 | 123.791 | Northern CA | O | 0.4 km SSE of Bruhel Point | 9-Jul-04 | 12:04 | 0.40 | 27 | |
| 39.607 | 123.787 | Northern CA | O | 0.4 km SSE of Bruhel Point | 9-Jul-04 | 12:02 | 0.40 | 31 | |
| 39.605 | 123.789 | Northern CA | O | 0.4 km SSE of Bruhel Point | 9-Jul-04 | 12:02 | 0.40 | 33 | |
| 39.600 | 123.790 | Northern CA | O | 0.9 km SSE of Bruhel Point | 9-Jul-04 | 12:02 | 0.40 | 214 | 3 |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|---------|---|-----------|--------------|-----------------|------------------------|-------------------------|
| 39.593 | 123.786 | Northern CA | O | 1.6 km S of Bruhel Point | 9-Jul-04 | 12:04 | 0.40 | 24 | |
| 39.582 | 123.779 | Northern CA | O | Vicinity of Newport | 9-Jul-04 | 12:05 | 0.40 | 60 | |
| 39.568 | 123.773 | Northern CA | O | 0.6 km NW of Ten Mile river Bluff | 9-Jul-04 | 12:05 | 0.40 | 18 | |
| 39.496 | 123.795 | Northern CA | N | 1.1 km NE of Laguna Point | 7-Jul-04 | 11:07 | 0.09 | 229 | |
| 39.492 | 123.805 | Northern CA | N | Laguna Point | 7-Jul-04 | 11:09 | 0.12 | 37 | |
| 39.489 | 123.805 | Northern CA | N | Laguna Point | 7-Jul-04 | 11:07 | 0.09 | 49 | |
| 39.472 | 123.808 | Northern CA | N | 2 km S of Laguna Point | 7-Jul-04 | 11:10 | 0.12 | 20 | |
| 39.454 | 123.815 | Northern CA | N | 1 km NNE of Soldier Point, Fort Bragg | 7-Jul-04 | 11:11 | 0.12 | 2 | |
| 39.453 | 123.814 | Northern CA | N | 1.6 km NNE of Soldier Point, Fort Bragg | 7-Jul-04 | 11:13 | 0.12 | 1 | |
| 39.451 | 123.815 | Northern CA | N | 1.3 km NNE of Soldier Point, Fort Bragg | 7-Jul-04 | 11:14 | 0.12 | 4 | |
| 39.448 | 123.817 | Northern CA | N | 0.9 km NNE of Soldier Point, Fort Bragg | 7-Jul-04 | 11:11 | 0.12 | 61 | |
| 39.437 | 123.821 | Northern CA | N | 0.3 km SSW of Soldier Point, Fort Bragg | 7-Jul-04 | 11:14 | 0.12 | 124 | |
| 39.385 | 123.822 | Northern CA | N | 1.7 km NNE of Caspar Point | 7-Jul-04 | 11:18 | 0.15 | 47 | 1 |
| 39.346 | 123.826 | Northern CA | N | 0.3 km SSE of Point Cabrillo | 9-Jul-04 | 12:12 | 0.43 | 36 | |
| 39.334 | 123.817 | Northern CA | N | 2.0 km SSE of Point Cabrillo | 9-Jul-04 | 12:13 | 0.43 | 14 | |
| 39.308 | 123.812 | Northern CA | N | Goat Island | 9-Jul-04 | 12:14 | 0.43 | 85 | |
| 39.290 | 123.804 | Northern CA | N | 2.0 km SSE of Goat Island | 9-Jul-04 | 12:16 | 0.43 | 160 | 1 |
| 39.275 | 123.801 | Northern CA | N | 0.6 km W of Van Damme Beach | 9-Jul-04 | 12:16 | 0.43 | 10 | |
| 39.272 | 123.800 | Northern CA | N | 0.5 km SW of Van Damme Beach | 9-Jul-04 | 12:16 | 0.43 | 19 | |
| 39.256 | 123.786 | Northern CA | N | Buckhorn Cove | 9-Jul-04 | 12:18 | 0.43 | 96 | |
| 39.248 | 123.784 | Northern CA | N | Stillwell Point | 9-Jul-04 | 12:20 | 0.43 | 12 | |
| 39.244 | 123.780 | Northern CA | N | 1.3 km N of Albion Head | 9-Jul-04 | 12:21 | 0.43 | 14 | |
| 39.195 | 123.771 | Northern CA | N | Navarro Point | 9-Jul-04 | 12:26 | 0.46 | 33 | |
| 39.171 | 123.749 | Northern CA | N | Devils Basin | 9-Jul-04 | 12:27 | 0.46 | 81 | |
| 39.144 | 123.740 | Northern CA | N | Cuffeys Point | 9-Jul-04 | 12:28 | 0.46 | 38 | |
| 39.109 | 123.716 | Northern CA | N | 4.0 km SSE of Cuffeys Point | 9-Jul-04 | 12:31 | 0.46 | 13 | |
| 39.099 | 123.711 | Northern CA | N | 5.3 km SSE of Cuffeys Point | 9-Jul-04 | 12:31 | 0.46 | 26 | |
| 39.054 | 123.695 | Northern CA | N | 11.3 km NNE of Point Arena | 9-Jul-04 | 12:34 | 0.46 | 4 | |
| 39.052 | 123.692 | Northern CA | N | 10.4 km NNE of Point Arena | 9-Jul-04 | 12:34 | 0.46 | 219 | |
| 39.042 | 123.694 | Northern CA | N | 10.4 km NNE of Point Arena | 9-Jul-04 | 12:34 | 0.46 | 55 | |
| 39.037 | 123.694 | Northern CA | N | Mouth of Mallo Pass Creek | 9-Jul-04 | 12:35 | 0.46 | 33 | |
| 38.956 | 123.743 | Northern CA | M | Point Arena | 18-Jul-04 | 9:12 | 0.24 | 78 | 6 |
| 38.944 | 123.735 | Northern CA | M | 1.5 km SSE of Point Arena | 18-Jul-04 | 9:12 | 0.24 | 8 | 15 |
| 38.926 | 123.728 | Northern CA | M | 3.5 km SSE of Point Arena | 18-Jul-04 | 9:11 | 0.24 | 4 | |
| 38.905 | 123.706 | Northern CA | M | 1.2 km SSE of Arena Cove | 18-Jul-04 | 9:04 | 0.21 | 9 | |
| 38.887 | 123.685 | Northern CA | M | 5 km NW of Saunders Landing | 18-Jul-04 | 9:01 | 0.21 | 13 | |
| 38.880 | 123.681 | Northern CA | M | 4.1 km NW of Saunders Landing | 18-Jul-04 | 9:01 | 0.21 | 74 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|---------|------------------------------|-----------|--------------|-----------------|------------------------|-------------------------|
| 38.844 | 123.641 | Northern CA | M | 0.7 km ESE of Iverson Point | 18-Jul-04 | 8:55 | 0.18 | 39 | |
| 38.838 | 123.632 | Northern CA | M | 1.4 km SE of Iverson Point | 18-Jul-04 | 8:55 | 0.18 | 17 | 1 |
| 38.838 | 123.634 | Northern CA | M | 1.4 km SE of Iverson Point | 18-Jul-04 | 8:57 | 0.18 | 20 | |
| 38.825 | 123.611 | Northern CA | M | 0.6 km ESE of Steens Landing | 18-Jul-04 | 8:51 | 0.18 | 16 | |
| 38.821 | 123.606 | Northern CA | M | 1.4 km N of Havens Neck | 18-Jul-04 | 8:51 | 0.18 | 12 | |
| 38.820 | 123.609 | Northern CA | M | 1.4 km N of Havens Neck | 18-Jul-04 | 8:54 | 0.18 | 25 | |
| 38.819 | 123.606 | Northern CA | M | 1.4 km NNE of Havens Neck | 18-Jul-04 | 8:51 | 0.18 | 16 | |
| 38.819 | 123.605 | Northern CA | M | 1.4 km NNE of Havens Neck | 18-Jul-04 | 8:51 | 0.18 | 26 | |
| 38.809 | 123.599 | Northern CA | M | Havens Neck | 18-Jul-04 | 8:50 | 0.18 | 22 | |
| 38.802 | 123.588 | Northern CA | M | Havens Anchorage | 18-Jul-04 | 8:49 | 0.18 | 74 | 1 |
| 38.798 | 123.591 | Northern CA | M | Fish rocks | 18-Jul-04 | 8:50 | 0.18 | 7 | |
| 38.784 | 123.569 | Northern CA | M | Bourns Landing | 18-Jul-04 | 8:46 | 0.18 | 9 | |
| 38.768 | 123.538 | Northern CA | M | Robinson Point | 18-Jul-04 | 8:45 | 0.18 | 18 | |
| 38.750 | 123.528 | Northern CA | M | East of Gualala Point Island | 18-Jul-04 | 8:42 | 0.15 | 15 | |
| 38.750 | 123.526 | Northern CA | M | 0.3 km S of Gualala Point | 18-Jul-04 | 8:44 | 0.15 | 17 | |
| 38.748 | 123.522 | Northern CA | M | 0.5 km SE of Gualala Point | 18-Jul-04 | 8:42 | 0.15 | 12 | |
| 38.747 | 123.524 | Northern CA | M | 0.65 km SE of Gualala Point | 18-Jul-04 | 8:44 | 0.15 | 16 | |
| 38.727 | 123.485 | Northern CA | M | 4.7 km SE of Gualala Point | 18-Jul-04 | 8:39 | 0.15 | 256 | |
| 38.726 | 123.483 | Northern CA | M | 4.7 km SE of Gualala Point | 18-Jul-04 | 8:39 | 0.15 | 8 | |
| 38.723 | 123.478 | Northern CA | M | 5.3 km SE of Gualala Point | 18-Jul-04 | 8:38 | 0.15 | 25 | |
| 38.722 | 123.473 | Northern CA | M | 5.9 km NNE of Black Point | 18-Jul-04 | 8:38 | 0.15 | 21 | |
| 38.721 | 123.470 | Northern CA | M | 5.9 km NNE of Black Point | 18-Jul-04 | 8:38 | 0.15 | 6 | |
| 38.716 | 123.462 | Northern CA | M | 4.8 km NNE of Black Point | 18-Jul-04 | 8:38 | 0.15 | 58 | |
| 38.709 | 123.454 | Northern CA | M | 3.4 km NNE of Black Point | 18-Jul-04 | 8:38 | 0.15 | 15 | |
| 38.705 | 123.451 | Northern CA | M | 3.4 km NNE of Black Point | 18-Jul-04 | 8:36 | 0.12 | 11 | 5 |
| 38.677 | 123.427 | Northern CA | M | 0.5 km SSE of Black Point | 18-Jul-04 | 8:34 | 0.12 | 23 | |
| 38.676 | 123.425 | Northern CA | M | 0.5 km SSE of Black Point | 18-Jul-04 | 8:34 | 0.12 | 5 | |
| 38.662 | 123.414 | Northern CA | M | 1 km NW of Stewarts Point | 18-Jul-04 | 8:34 | 0.12 | 15 | |
| 38.654 | 123.409 | Northern CA | M | Stewarts Point | 18-Jul-04 | 8:32 | 0.12 | 137 | |
| 38.654 | 123.408 | Northern CA | M | Stewarts Point | 18-Jul-04 | 8:33 | 0.12 | 139 | |
| 38.649 | 123.403 | Northern CA | M | 0.7 km SE of Stewarts Point | 18-Jul-04 | 8:33 | 0.12 | 33 | |
| 38.644 | 123.401 | Northern CA | M | Sandy Point | 18-Jul-04 | 8:31 | 0.09 | 55 | 1 |
| 38.635 | 123.390 | Northern CA | M | 0.5 km N of rocky Point | 18-Jul-04 | 8:28 | 0.09 | 42 | 1 |
| 38.630 | 123.389 | Northern CA | M | 0.3 km N of rocky Point | 18-Jul-04 | 8:26 | 0.06 | 118 | |
| 38.629 | 123.386 | Northern CA | M | 0.3 km ESE of rocky Point | 18-Jul-04 | 8:29 | 0.09 | 35 | |
| 38.612 | 123.368 | Northern CA | M | Horseshoe Cove | 18-Jul-04 | 8:25 | 0.06 | 13 | 2 |
| 38.602 | 123.366 | Northern CA | M | 0.9 km SE of Horseshoe Point | 18-Jul-04 | 8:23 | 0.06 | 12 | 3 |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|---------|-------------------------------|-----------|--------------|-----------------|------------------------|-------------------------|
| 38.589 | 123.344 | Northern CA | M | 3.2 km SE of Horseshoe Point | 18-Jul-04 | 8:22 | 0.06 | 17 | 6 |
| 38.565 | 123.332 | Northern CA | M | Salt Point | 18-Jul-04 | 8:18 | 0.06 | 27 | |
| 38.560 | 123.322 | Northern CA | M | 1.1 km SE of Salt Point | 18-Jul-04 | 8:15 | 0.03 | 52 | |
| 38.559 | 123.318 | Northern CA | M | 1.5 km SE of Salt Point | 18-Jul-04 | 8:15 | 0.03 | 2 | 1 |
| 38.546 | 123.298 | Northern CA | M | 0.95 km NW Stillwater Cove | 18-Jul-04 | 8:13 | 0.03 | 6 | |
| 38.540 | 123.289 | Northern CA | M | Stillwater Cove | 18-Jul-04 | 8:12 | 0.03 | 10 | |
| 38.535 | 123.282 | Northern CA | M | 1.7 km NW of Windermere Point | 18-Jul-04 | 8:12 | 0.03 | 19 | 2 |
| 38.531 | 123.278 | Northern CA | M | 1.0 km NW of Windermere Point | 18-Jul-04 | 8:10 | 0.03 | 31 | |
| 38.528 | 123.268 | Northern CA | M | 0.3 km NE of Windermere Point | 18-Jul-04 | 8:12 | 0.03 | 4 | |
| 38.517 | 123.258 | Northern CA | M | Vicinity of Northwest Cape | 18-Jul-04 | 8:07 | 0.00 | 1 | |
| 38.514 | 123.254 | Northern CA | M | Fort Ross Cove | 18-Jul-04 | 8:03 | 0.00 | 29 | |
| 38.513 | 123.246 | Northern CA | M | Fort Ross Cove | 18-Jul-04 | 8:01 | 0.00 | 4 | |
| 38.512 | 123.248 | Northern CA | M | Fort Ross Cove | 18-Jul-04 | 8:01 | 0.00 | 15 | |
| 38.512 | 123.255 | Northern CA | M | Fort Ross Cove | 18-Jul-04 | 8:04 | 0.00 | 55 | |
| 38.511 | 123.248 | Northern CA | M | Fort Ross Cove | 18-Jul-04 | 8:01 | 0.00 | 29 | 2 |
| 38.504 | 123.233 | Northern CA | M | Fort Ross Reef | 18-Jul-04 | 7:59 | -0.03 | 30 | |
| 38.496 | 123.212 | Northern CA | L | 3.6 km ESE of Northwest Cape | 18-Jul-04 | 7:58 | -0.03 | 7 | |
| 38.495 | 123.209 | Northern CA | L | 3.6 km ESE of Northwest Cape | 18-Jul-04 | 7:58 | -0.03 | 10 | |
| 38.477 | 123.173 | Northern CA | L | 4.8 km NW of Russian River | 18-Jul-04 | 7:57 | -0.03 | 6 | |
| 38.474 | 123.170 | Northern CA | L | 4.4 km NW of Russian River | 18-Jul-04 | 7:57 | -0.03 | 14 | |
| 38.462 | 123.152 | Northern CA | L | 2.3 km NW of Russian River | 18-Jul-04 | 7:56 | -0.03 | 4 | 1 |
| 38.461 | 123.150 | Northern CA | L | 2.2 km NW of Russian River | 18-Jul-04 | 7:56 | -0.03 | 1 | |
| 38.456 | 123.145 | Northern CA | L | 1.5 km NW of Russian River | 18-Jul-04 | 7:54 | -0.03 | 30 | |
| 38.454 | 123.139 | Northern CA | L | 1 km WNW of Russian River | 18-Jul-04 | 7:54 | -0.03 | 11 | 1 |
| 38.451 | 123.129 | Northern CA | L | Mouth of Russian river | 18-Jul-04 | 7:53 | -0.03 | 315 | 2 |
| 38.421 | 123.114 | Northern CA | L | 0.9 km SE of Gull Rock | 18-Jul-04 | 7:50 | -0.06 | 9 | |
| 38.420 | 123.112 | Northern CA | L | 1.3 km SE of Gull Rock | 18-Jul-04 | 7:48 | -0.06 | 2 | |
| 38.419 | 123.110 | Northern CA | L | 1.3 km SE of Gull Rock | 18-Jul-04 | 7:50 | -0.06 | 4 | |
| 38.403 | 123.100 | Northern CA | L | rock off Wrights Beach | 18-Jul-04 | 7:47 | -0.06 | 18 | |
| 38.393 | 123.091 | Northern CA | L | Gleason Beach | 18-Jul-04 | 7:43 | -0.06 | 17 | |
| 38.391 | 123.088 | Northern CA | L | Gleason Beach | 18-Jul-04 | 7:43 | -0.06 | 36 | 2 |
| 38.317 | 123.073 | Northern CA | L | Bodega Head | 19-Jul-04 | 9:22 | 0.18 | 9 | |
| 38.314 | 123.070 | Northern CA | L | Bodega Head | 19-Jul-04 | 10:03 | 0.37 | 8 | |
| 38.296 | 123.048 | Northern CA | L | Bodega Rock | 18-Jul-04 | 9:46 | 0.43 | 16 | 2 |
| 38.230 | 122.994 | Northern CA | L | Tomales Point (TRB) | 25-Jun-04 | 11:30 | 0.15 | 50 | |
| 38.230 | 122.994 | Northern CA | L | Tomales Point (RB1) | 25-Jun-04 | 12:20 | 0.18 | 42 | |
| 38.230 | 122.994 | Northern CA | L | Tomales Point (RB2) | 25-Jun-04 | 12:30 | 0.21 | 9 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|----------------|---------------------------------------|-----------|--------------|-----------------|------------------------|-------------------------|
| 38.230 | 122.994 | Northern CA | L | Tomales Point (RB3) | 25-Jun-04 | 12:40 | 0.21 | 70 | |
| 38.230 | 122.994 | Northern CA | L | Tomales Point (RB4) | 25-Jun-04 | 12:50 | 0.24 | 25 | |
| 38.230 | 122.994 | Northern CA | L | Tomales Point (RB5) | 25-Jun-04 | 12:55 | 0.24 | 57 | |
| 38.230 | 122.994 | Northern CA | L | Tomales Point (BR) | 25-Jun-04 | 13:05 | 0.27 | 228 | |
| 38.218 | 122.962 | Northern CA | L | Tomales Bay (Seal Island) | 25-Jun-04 | 11:45 | 0.15 | 287 | |
| 38.218 | 122.962 | Northern CA | L | Tomales Bay (Clam Island) | 25-Jun-04 | 12:05 | 0.18 | 10 | |
| 38.095 | 122.040 | Central CA | SF Bay | Ryer Island | 24-Jun-04 | 12:19 | 0.18 | 55 | |
| 37.933 | 122.419 | Central CA | SF Bay | Castro Rocks | 24-Jun-04 | 12:00 | 0.09 | 158 | 1 |
| 37.871 | 122.496 | Central CA | SF Bay | Sausalito marina platform | 24-Jun-04 | 10:49 | 0.09 | 11 | |
| 37.857 | 122.420 | Central CA | SF Bay | Vicinity of Point Blunt, Angel Island | 24-Jun-04 | 10:59 | 0.09 | 8 | |
| 37.807 | 122.363 | Central CA | SF Bay | Yerba Buena Island | 25-Jun-04 | 10:10 | 0.43 | 1 | 1 |
| 37.539 | 122.218 | Central CA | SF Bay | Steinberger Slough | 24-Jun-04 | 13:30 | 0.21 | 23 | |
| 37.525 | 122.216 | Central CA | SF Bay | Corkscrew Slough | 24-Jun-04 | 13:27 | 0.21 | 11 | 2 |
| 37.523 | 122.219 | Central CA | SF Bay | Corkscrew Slough | 24-Jun-04 | 13:29 | 0.21 | 8 | |
| 37.507 | 122.086 | Central CA | SF Bay | Newark Slough | 24-Jun-04 | 13:20 | 0.18 | 7 | |
| 37.493 | 122.048 | Central CA | SF Bay | Mowry Slough | 24-Jun-04 | 13:12 | 0.12 | 141 | |
| 37.486 | 122.033 | Central CA | SF Bay | Mowry Slough | 24-Jun-04 | 13:10 | 0.12 | 121 | |
| 37.464 | 122.034 | Central CA | SF Bay | Coyote Creek | 24-Jun-04 | 13:05 | 0.09 | 77 | |
| 38.048 | 122.939 | Central CA | K | Drakes Estero | 25-Jun-04 | 9:52 | 0.31 | 161 | 1 |
| 38.038 | 122.938 | Central CA | K | Drakes Estero | 25-Jun-04 | 9:48 | 0.31 | 547 | 28 |
| 38.033 | 122.927 | Central CA | K | Drakes Estero | 25-Jun-04 | 9:45 | 0.31 | 433 | 10 |
| 38.033 | 122.930 | Central CA | K | Drakes Estero | 25-Jun-04 | 9:45 | 0.31 | | 3 |
| 37.994 | 122.996 | Central CA | K | Point Reyes | 25-Jun-04 | 9:37 | 0.34 | 136 | |
| 37.994 | 122.995 | Central CA | K | Point Reyes | 25-Jun-04 | 9:37 | 0.34 | 85 | |
| 37.993 | 122.994 | Central CA | K | Point Reyes | 25-Jun-04 | 9:33 | 0.34 | 82 | |
| 37.993 | 122.986 | Central CA | K | Point Reyes | 25-Jun-04 | 9:33 | 0.34 | 2 | |
| 37.993 | 122.984 | Central CA | K | Point Reyes | 25-Jun-04 | 9:33 | 0.34 | 7 | |
| 37.945 | 122.776 | Central CA | K | Double Point | 25-Jun-04 | 9:17 | -0.03 | 939 | 46 |
| 37.915 | 122.668 | Central CA | K | Bolinas Lagoon | 24-Jun-04 | 10:04 | 0.09 | 30 | |
| 37.913 | 122.673 | Central CA | K | Bolinas Lagoon | 24-Jun-04 | 10:04 | 0.09 | 235 | |
| 37.909 | 122.676 | Central CA | K | Bolinas Lagoon | 24-Jun-04 | 10:07 | 0.09 | 266 | 1 |
| 37.890 | 122.700 | Central CA | K | Bolinas Point | 25-Jun-04 | 9:13 | -0.03 | 45 | 1 |
| 37.823 | 122.524 | Central CA | K | Point Bonita | 24-Jun-04 | 9:49 | 0.12 | 27 | |
| 37.821 | 122.528 | Central CA | K | Point Bonita | 24-Jun-04 | 9:53 | 0.12 | 53 | |
| 37.700 | 123.006 | Central CA | K ^b | Southeast Farallon Islands | 24-Jun-04 | 10:00 | 0.09 | 122 | |
| 37.524 | 122.519 | Central CA | K | Vicinity of San Vicente Creek | 24-Jun-04 | 9:26 | 0.09 | 40 | |
| 37.518 | 122.515 | Central CA | K | Reefs W of Half Moon Bay Airport | 24-Jun-04 | 9:26 | 0.09 | 11 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|------------|---------|----------------------------------|-----------|--------------|-----------------|------------------------|-------------------------|
| 37.516 | 122.514 | Central CA | K | Reefs W of Half Moon Bay Airport | 24-Jun-04 | 9:26 | 0.09 | 6 | |
| 37.515 | 122.513 | Central CA | K | Reefs W of Half Moon Bay Airport | 24-Jun-04 | 9:26 | 0.09 | 23 | |
| 37.512 | 122.511 | Central CA | K | Reefs W of Half Moon Bay Airport | 24-Jun-04 | 9:25 | 0.09 | 26 | |
| 37.506 | 122.505 | Central CA | K | Reefs W of Half Moon Bay Airport | 24-Jun-04 | 9:25 | 0.09 | 41 | |
| 37.504 | 122.503 | Central CA | K | Reefs W of Half Moon Bay Airport | 24-Jun-04 | 9:24 | 0.09 | 29 | |
| 37.503 | 122.501 | Central CA | K | Reefs W of Half Moon Bay Airport | 24-Jun-04 | 9:24 | 0.09 | 3 | |
| 37.502 | 122.490 | Central CA | K | Half Moon Bay Harbor | 24-Jun-04 | 9:22 | 0.09 | 9 | |
| 37.493 | 122.500 | Central CA | J | Sail Rock, Pillar Point | 24-Jun-04 | 9:20 | 0.09 | 47 | 1 |
| 37.493 | 122.500 | Central CA | J | Sail Rock, Pillar Point | 24-Jun-04 | 9:20 | 0.09 | 2 | |
| 37.432 | 122.443 | Central CA | J | The Rocks, Miramontes Point | 24-Jun-04 | 9:15 | 0.06 | 8 | 1 |
| 37.417 | 122.435 | Central CA | J | 1.3 km NNW of Eel Rock | 24-Jun-04 | 9:15 | 0.06 | 254 | 6 |
| 37.415 | 122.434 | Central CA | J | 1.1 km NNW of Eel Rock | 24-Jun-04 | 9:15 | 0.06 | 19 | |
| 37.406 | 122.428 | Central CA | J | Eel Rock | 24-Jun-04 | 9:14 | 0.06 | 10 | |
| 37.401 | 122.427 | Central CA | J | Vicinity of Purisima Creek | 24-Jun-04 | 9:14 | 0.06 | 59 | |
| 37.376 | 122.412 | Central CA | J | Mathis Beach | 24-Jun-04 | 9:13 | 0.06 | 41 | |
| 37.266 | 122.414 | Central CA | J | Pescadero Creek | 24-Jun-04 | 9:09 | 0.03 | 77 | |
| 37.233 | 122.416 | Central CA | J | 6.0 km NNW of Pigeon Point | 24-Jun-04 | 9:08 | 0.03 | 209 | 3 |
| 37.232 | 122.415 | Central CA | J | 5.9 km NNW of Pigeon Point | 24-Jun-04 | 9:08 | 0.03 | 111 | 5 |
| 37.212 | 122.409 | Central CA | J | 3.7 km NNW of Pigeon Point | 24-Jun-04 | 9:07 | 0.03 | 9 | |
| 37.210 | 122.408 | Central CA | J | 3.4 km NNW of Pigeon Point | 24-Jun-04 | 9:07 | 0.03 | 211 | 1 |
| 37.208 | 122.407 | Central CA | J | 3.2 km NNW of Pigeon Point | 24-Jun-04 | 9:07 | 0.03 | 12 | 1 |
| 37.180 | 122.379 | Central CA | J | 1.4 km E of Pigeon Point | 24-Jun-04 | 9:05 | 0.03 | 4 | |
| 37.150 | 122.361 | Central CA | J | Franklin Point | 24-Jun-04 | 9:04 | 0.03 | 5 | |
| 37.148 | 122.356 | Central CA | J | Franklin Point | 24-Jun-04 | 9:04 | 0.03 | 10 | |
| 37.139 | 122.344 | Central CA | J | 3.5 km NNW of Año Nuevo Island | 24-Jun-04 | 9:02 | 0.03 | 4 | |
| 37.120 | 122.340 | Central CA | J | Point Año Nuevo | 24-Jun-04 | 9:01 | 0.03 | 32 | 2 |
| 37.117 | 122.337 | Central CA | J | Point Año Nuevo | 24-Jun-04 | 9:00 | 0.06 | 4 | |
| 37.111 | 122.328 | Central CA | J | Año Nuevo Island | 24-Jun-04 | 8:48 | 0.09 | 13 | 1 |
| 37.110 | 122.339 | Central CA | J | Año Nuevo Island | 24-Jun-04 | 8:54 | 0.09 | 54 | |
| 37.109 | 122.337 | Central CA | J | Año Nuevo Island | 24-Jun-04 | 8:53 | 0.09 | 3 | |
| 37.108 | 122.338 | Central CA | J | Año Nuevo Island | 24-Jun-04 | 8:49 | 0.09 | 11 | |
| 37.108 | 122.337 | Central CA | J | Año Nuevo Island | 24-Jun-04 | 8:51 | 0.09 | 17 | |
| 37.085 | 122.272 | Central CA | J | Point Año Nuevo | 24-Jun-04 | 8:45 | 0.09 | 4 | |
| 37.068 | 122.258 | Central CA | J | 6.3 km ESE of Año Nuevo Island | 24-Jun-04 | 8:45 | 0.09 | 24 | |
| 37.066 | 122.257 | Central CA | J | 5.7 km NW of El Jarro Point | 24-Jun-04 | 8:45 | 0.09 | 38 | |
| 37.058 | 122.250 | Central CA | J | 5.5 km NW of El Jarro Point | 24-Jun-04 | 8:42 | 0.09 | 240 | |
| 37.056 | 122.248 | Central CA | J | 4.4 km NW of El Jarro Point | 24-Jun-04 | 8:42 | 0.09 | 21 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|------------|---------|------------------------------------|-----------|--------------|-----------------|------------------------|-------------------------|
| 37.013 | 122.205 | Central CA | J | 4.1 km NW of El Jarro Point | 24-Jun-04 | 8:39 | 0.09 | 6 | |
| 36.968 | 122.133 | Central CA | I | Table Rock | 24-Jun-04 | 8:35 | 0.12 | 70 | |
| 36.967 | 122.134 | Central CA | I | Vicinity of Davenport | 24-Jun-04 | 8:35 | 0.12 | 239 | 9 |
| 36.954 | 121.976 | Central CA | I | Soquel Point, Santa Cruz harbor | 23-Jun-04 | 11:32 | 0.34 | 9 | |
| 36.816 | 121.747 | Central CA | I | Elkhorn Slough | 23-Jun-04 | 11:18 | 0.24 | 24 | |
| 36.815 | 121.767 | Central CA | I | Elkhorn Slough | 23-Jun-04 | 11:20 | 0.24 | 86 | |
| 36.814 | 121.771 | Central CA | I | Elkhorn Slough | 23-Jun-04 | 11:16 | 0.24 | 68 | |
| 36.814 | 121.771 | Central CA | I | Elkhorn Slough | 23-Jun-04 | 11:16 | 0.24 | 28 | |
| 36.812 | 121.789 | Central CA | I | Elkhorn Slough | 23-Jun-04 | 11:15 | 0.24 | 140 | |
| 36.638 | 121.935 | Central CA | I | Point Pinos | 23-Jun-04 | 11:00 | 0.18 | 4 | |
| 36.636 | 121.928 | Central CA | I | Point Pinos | 23-Jun-04 | 11:02 | 0.18 | 6 | |
| 36.633 | 121.923 | Central CA | I | Point Pinos | 23-Jun-04 | 11:02 | 0.18 | 8 | |
| 36.631 | 121.922 | Central CA | I | Point Pinos | 23-Jun-04 | 11:04 | 0.18 | 7 | |
| 36.629 | 121.921 | Central CA | I | Point Pinos | 23-Jun-04 | 11:04 | 0.18 | 2 | |
| 36.626 | 121.941 | Central CA | I | Point Pinos | 23-Jun-04 | 10:58 | 0.18 | 11 | |
| 36.625 | 121.915 | Central CA | I | Vicinity of Lovers Point, Monterey | 23-Jun-04 | 11:04 | 0.18 | 23 | |
| 36.624 | 121.914 | Central CA | I | Vicinity of Lovers Point, Monterey | 23-Jun-04 | 11:04 | 0.18 | 45 | |
| 36.624 | 121.940 | Central CA | I | Point Pinos | 23-Jun-04 | 10:58 | 0.18 | 4 | |
| 36.622 | 121.908 | Central CA | I | Point Cabrillo, Monterey | 23-Jun-04 | 11:04 | 0.18 | 14 | |
| 36.621 | 121.907 | Central CA | I | Point Cabrillo, Monterey | 23-Jun-04 | 11:04 | 0.18 | 52 | 1 |
| 36.621 | 121.903 | Central CA | I | Point Cabrillo, Monterey | 23-Jun-04 | 11:04 | 0.18 | 75 | 1 |
| 36.621 | 121.904 | Central CA | I | Point Cabrillo, Monterey | 23-Jun-04 | 11:04 | 0.18 | 52 | 2 |
| 36.618 | 121.901 | Central CA | I | Cannery Row, Monterey | 23-Jun-04 | 11:06 | 0.21 | 32 | |
| 36.617 | 121.900 | Central CA | I | Cannery Row, Monterey | 23-Jun-04 | 11:06 | 0.21 | 18 | |
| 36.614 | 121.898 | Central CA | I | Cannery Row, Monterey | 23-Jun-04 | 11:06 | 0.21 | 24 | |
| 36.606 | 121.894 | Central CA | I | Monterey Harbor | 23-Jun-04 | 11:08 | 0.21 | 28 | 1 |
| 36.604 | 121.967 | Central CA | I | Vicinity of Point Joe | 23-Jun-04 | 10:56 | 0.18 | 116 | |
| 36.583 | 121.974 | Central CA | I | Cypress Point | 23-Jun-04 | 10:50 | 0.15 | 2 | |
| 36.583 | 121.975 | Central CA | I | Cypress Point | 23-Jun-04 | 10:50 | 0.15 | 3 | |
| 36.583 | 121.976 | Central CA | I | Cypress Point | 23-Jun-04 | 10:51 | 0.15 | 30 | |
| 36.583 | 121.975 | Central CA | I | Cypress Point | 23-Jun-04 | 10:50 | 0.15 | 27 | |
| 36.581 | 121.977 | Central CA | I | Cypress Point | 23-Jun-04 | 10:51 | 0.15 | 30 | |
| 36.581 | 121.976 | Central CA | I | Cypress Point | 23-Jun-04 | 10:50 | 0.15 | 19 | |
| 36.580 | 121.978 | Central CA | I | Cypress Point | 23-Jun-04 | 10:47 | 0.15 | 60 | |
| 36.580 | 121.977 | Central CA | I | Cypress Point | 23-Jun-04 | 10:49 | 0.15 | 38 | |
| 36.580 | 121.979 | Central CA | I | Cypress Point | 23-Jun-04 | 10:47 | 0.15 | 14 | |
| 36.579 | 121.978 | Central CA | I | Cypress Point | 23-Jun-04 | 10:47 | 0.15 | 11 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|------------|---------|--|-----------|--------------|-----------------|------------------------|-------------------------|
| 36.579 | 121.978 | Central CA | I | Cypress Point | 23-Jun-04 | 10:47 | 0.15 | 21 | |
| 36.576 | 121.974 | Central CA | I | Cypress Point | 23-Jun-04 | 10:47 | 0.15 | 108 | |
| 36.575 | 121.973 | Central CA | I | Cypress Point | 23-Jun-04 | 10:47 | 0.15 | 60 | |
| 36.565 | 121.951 | Central CA | I | Pescadero Point | 23-Jun-04 | 10:44 | 0.12 | 48 | |
| 36.563 | 121.944 | Central CA | I | Stillwater Cove, vicinity of Carmel by the Sea | 23-Jun-04 | 10:44 | 0.12 | 67 | |
| 36.562 | 121.940 | Central CA | I | Arrowhead Point, vicinity of Carmel by the Sea | 23-Jun-04 | 10:40 | 0.12 | 18 | |
| 36.562 | 121.939 | Central CA | I | Arrowhead Point, vicinity of Carmel by the Sea | 23-Jun-04 | 10:40 | 0.12 | 111 | |
| 36.561 | 121.940 | Central CA | I | Arrowhead Point, vicinity of Carmel by the Sea | 23-Jun-04 | 10:40 | 0.12 | 14 | |
| 36.561 | 121.939 | Central CA | I | Arrowhead Point, vicinity of Carmel by the Sea | 23-Jun-04 | 10:40 | 0.12 | 110 | |
| 36.523 | 121.935 | Central CA | I | Granite Point, vicinity of Point Lobos | 23-Jun-04 | 10:38 | 0.12 | 17 | |
| 36.523 | 121.936 | Central CA | I | Granite Point, vicinity of Point Lobos | 23-Jun-04 | 10:38 | 0.12 | 72 | |
| 36.522 | 121.942 | Central CA | I | Bluefish Cove, Point Lobos | 23-Jun-04 | 10:38 | 0.12 | 12 | |
| 36.519 | 121.952 | Central CA | I | Headland Cove, Point Lobos | 23-Jun-04 | 10:36 | 0.12 | 1 | |
| 36.518 | 121.952 | Central CA | I | Sea Lion Cove, Point Lobos | 23-Jun-04 | 10:34 | 0.15 | 20 | |
| 36.517 | 121.953 | Central CA | I | Sea Lion Cove, Point Lobos | 23-Jun-04 | 10:34 | 0.15 | 19 | 1 |
| 36.517 | 121.950 | Central CA | I | Sand Hill Cove, Point Lobos | 23-Jun-04 | 10:35 | 0.15 | 10 | |
| 36.489 | 121.945 | Central CA | H | Yankee Point | 23-Jun-04 | 10:32 | 0.15 | 35 | |
| 36.478 | 121.938 | Central CA | H | 1.7 km SSE of Yankee Point | 23-Jun-04 | 10:30 | 0.15 | 22 | |
| 36.473 | 121.937 | Central CA | H | 2.2 km SSE of Yankee Point | 23-Jun-04 | 10:30 | 0.15 | 11 | |
| 36.462 | 121.928 | Central CA | H | 1.0 km NE of Lobos Rocks | 23-Jun-04 | 10:28 | 0.15 | 45 | |
| 36.443 | 121.924 | Central CA | H | 0.8 km SSE of Soberanes Point | 23-Jun-04 | 10:27 | 0.15 | 30 | |
| 36.440 | 121.923 | Central CA | H | 1.1 km SSE of Soberanes Point | 23-Jun-04 | 10:27 | 0.15 | 21 | |
| 36.400 | 121.909 | Central CA | H | 0.6 km SE Rocky Point | 23-Jun-04 | 10:24 | 0.15 | 15 | |
| 36.302 | 121.891 | Central CA | H | 0.8 km ESE of Point Sur | 23-Jun-04 | 10:19 | 0.12 | 14 | |
| 36.300 | 121.885 | Central CA | H | 1.3 km ESE of Point Sur | 23-Jun-04 | 10:19 | 0.12 | 78 | 1 |
| 36.288 | 121.875 | Central CA | H | 2.8 km SE of Point Sur | 23-Jun-04 | 10:16 | 0.12 | 66 | |
| 36.264 | 121.844 | Central CA | H | 1.7 km NNW of Cooper Point | 23-Jun-04 | 10:15 | 0.15 | 82 | |
| 36.224 | 121.773 | Central CA | H | 3.8 km WNW of Grimes Point | 23-Jun-04 | 10:10 | 0.15 | 35 | |
| 36.198 | 121.723 | Central CA | H | 1.6 km ESE of Grimes Point | 23-Jun-04 | 10:09 | 0.15 | 2 | |
| 36.171 | 121.691 | Central CA | H | 0.8 km ESE of Partington Point | 23-Jun-04 | 10:06 | 0.12 | 27 | |
| 36.148 | 121.662 | Central CA | H | Vicinity of Anderson Landing | 23-Jun-04 | 10:03 | 0.12 | 3 | |
| 36.099 | 121.623 | Central CA | H | 1.7 km N Dolan Rock | 23-Jun-04 | 9:59 | 0.12 | 3 | |
| 36.098 | 121.622 | Central CA | H | 1.6 km N Dolan Rock | 23-Jun-04 | 9:59 | 0.12 | 45 | |
| 36.081 | 121.615 | Central CA | H | 0.5 km SSE of Dolan Rock | 23-Jun-04 | 9:56 | 0.12 | 135 | |
| 36.080 | 121.614 | Central CA | H | 0.7 km SSE of Dolan Rock | 23-Jun-04 | 9:56 | 0.12 | 20 | |
| 36.080 | 121.614 | Central CA | H | 0.7 km SSE of Dolan Rock | 23-Jun-04 | 9:56 | 0.12 | 15 | |
| 36.077 | 121.612 | Central CA | H | 1.1 km SSE of Dolan Rock | 23-Jun-04 | 9:59 | 0.12 | 20 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|------------|---------|-------------------------------------|-----------|--------------|-----------------|------------------------|-------------------------|
| 36.042 | 121.586 | Central CA | H | 1.1 SSE of Gamboa Point | 23-Jun-04 | 9:54 | 0.12 | 1 | |
| 36.020 | 121.568 | Central CA | H | 2.9 km NNW of Lopez Point | 23-Jun-04 | 9:53 | 0.12 | 19 | |
| 36.019 | 121.553 | Central CA | H | 1.3 km E of Lopez Point | 25-Jun-04 | 11:04 | 0.27 | 7 | |
| 36.019 | 121.551 | Central CA | H | 1.5 km E of Lopez Point | 25-Jun-04 | 11:05 | 0.27 | 11 | |
| 36.018 | 121.549 | Central CA | H | 1.7 km E of Lopez Point | 25-Jun-04 | 11:05 | 0.27 | 16 | |
| 35.962 | 121.485 | Central CA | G | 8.3 NNW of Cape San Martin | 25-Jun-04 | 11:08 | 0.31 | 33 | 1 |
| 35.959 | 121.485 | Central CA | G | 8.0 NNW of Cape San Martin | 25-Jun-04 | 11:08 | 0.31 | 21 | |
| 35.958 | 121.484 | Central CA | G | 7.9 NNW of Cape San Martin | 25-Jun-04 | 11:09 | 0.31 | 3 | |
| 35.957 | 121.484 | Central CA | G | 7.8 NNW of Cape San Martin | 25-Jun-04 | 11:10 | 0.31 | 6 | |
| 35.936 | 121.478 | Central CA | G | 5.4 NNW of Cape San Martin | 25-Jun-04 | 11:12 | 0.31 | 10 | |
| 35.930 | 121.477 | Central CA | G | 4.7 NNW of Cape San Martin | 25-Jun-04 | 11:12 | 0.31 | 3 | |
| 35.911 | 121.469 | Central CA | G | 2.4 N of Cape San Martin | 25-Jun-04 | 11:14 | 0.31 | 13 | |
| 35.880 | 121.454 | Central CA | G | 1.4 km SE of Cape San Martin | 25-Jun-04 | 11:15 | 0.31 | 15 | |
| 35.865 | 121.435 | Central CA | G | 3.8 km SE of Cape San Martin | 25-Jun-04 | 11:16 | 0.31 | 19 | |
| 35.863 | 121.431 | Central CA | G | 4.2 km SE of Cape San Martin | 25-Jun-04 | 11:17 | 0.31 | 5 | |
| 35.862 | 121.429 | Central CA | G | 4.4 km SE of Cape San Martin | 25-Jun-04 | 11:17 | 0.31 | 3 | |
| 35.858 | 121.421 | Central CA | G | 5.2 km SE of Cape San Martin | 25-Jun-04 | 11:17 | 0.31 | 5 | |
| 35.857 | 121.415 | Central CA | G | 5.7 km SE of Cape San Martin | 25-Jun-04 | 11:19 | 0.31 | 1 | |
| 35.821 | 121.385 | Central CA | G | 8.5 km NW of Ragged Point | 25-Jun-04 | 11:23 | 0.31 | 1 | |
| 35.811 | 121.370 | Central CA | G | 6.8 km NNW of Ragged Point | 25-Jun-04 | 11:24 | 0.31 | 4 | |
| 35.804 | 121.359 | Central CA | G | 5.6 km NNW of Ragged Point | 25-Jun-04 | 11:24 | 0.31 | 9 | |
| 35.736 | 121.319 | Central CA | G | 2.8 km SSE of Ragged Point | 25-Jun-04 | 11:27 | 0.31 | 288 | 4 |
| 35.709 | 121.313 | Central CA | G | Vicinity of La Cruz Rock | 25-Jun-04 | 11:28 | 0.31 | 20 | |
| 35.708 | 121.313 | Central CA | G | Vicinity of La Cruz Rock | 25-Jun-04 | 11:28 | 0.31 | 42 | |
| 35.700 | 121.301 | Central CA | G | 1.4 km NW of Arroyo del Oso | 25-Jun-04 | 11:29 | 0.31 | 44 | |
| 35.664 | 121.287 | Central CA | G | Point Piedras Blancas | 25-Jun-04 | 11:32 | 0.34 | 72 | |
| 35.662 | 121.260 | Central CA | G | 2.4 km E of Point Piedras Blancas | 25-Jun-04 | 11:34 | 0.34 | 22 | |
| 35.660 | 121.255 | Central CA | G | 2.9 km ESE of Point Piedras Blancas | 25-Jun-04 | 11:36 | 0.34 | 49 | |
| 35.655 | 121.247 | Central CA | G | 3.7 km ESE of Point Piedras Blancas | 25-Jun-04 | 11:36 | 0.34 | 15 | |
| 35.651 | 121.229 | Central CA | G | 3.6 km WNW of San Simeon Point | 25-Jun-04 | 11:36 | 0.34 | 39 | |
| 35.641 | 121.206 | Central CA | G | 1.2 km WNW of San Simeon Point | 25-Jun-04 | 11:37 | 0.34 | 88 | |
| 35.640 | 121.180 | Central CA | G | San Simeon Bay | 25-Jun-04 | 11:38 | 0.34 | 27 | |
| 35.617 | 121.152 | Central CA | G | San Simeon | 25-Jun-04 | 11:41 | 0.34 | 35 | |
| 35.604 | 121.142 | Central CA | G | The Oaks, San Simeon | 25-Jun-04 | 11:41 | 0.34 | 48 | |
| 35.603 | 121.140 | Central CA | G | The Oaks, San Simeon | 25-Jun-04 | 11:41 | 0.34 | 110 | |
| 35.578 | 121.117 | Central CA | G | San Simeon Beach State Park | 25-Jun-04 | 11:45 | 0.34 | 67 | |
| 35.536 | 121.087 | Central CA | G | Vicinity of White Rock | 25-Jun-04 | 11:47 | 0.34 | 37 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|------------|---------|--|-----------|--------------|-----------------|------------------------|-------------------------|
| 35.532 | 121.083 | Central CA | G | Vicinity of White Rock | 25-Jun-04 | 11:47 | 0.34 | 14 | |
| 35.530 | 121.081 | Central CA | G | Vicinity of White Rock | 25-Jun-04 | 11:47 | 0.34 | 18 | |
| 35.515 | 121.066 | Central CA | G | 8.3 km NW of Point Estero | 25-Jun-04 | 11:48 | 0.37 | 78 | 1 |
| 35.502 | 121.048 | Central CA | G | 6.2 km NW of Point Estero | 25-Jun-04 | 11:48 | 0.37 | 28 | |
| 35.489 | 121.034 | Central CA | F | 4.2 km NW of Point Estero | 25-Jun-04 | 11:49 | 0.37 | 40 | |
| 35.485 | 121.029 | Central CA | F | 3.6 km NW of Point Estero | 25-Jun-04 | 11:50 | 0.37 | 14 | |
| 35.484 | 121.027 | Central CA | F | 3.4 km NW of Point Estero | 25-Jun-04 | 11:50 | 0.37 | 10 | |
| 35.484 | 121.025 | Central CA | F | 3.2 km NW of Point Estero | 25-Jun-04 | 11:50 | 0.37 | 11 | |
| 35.484 | 121.024 | Central CA | F | 3.2 km NW of Point Estero | 25-Jun-04 | 11:50 | 0.37 | 28 | |
| 35.482 | 121.025 | Central CA | F | 3.1 km NW of Point Estero | 25-Jun-04 | 11:49 | 0.37 | 21 | |
| 35.480 | 121.023 | Central CA | F | 2.8 km NW of Point Estero | 25-Jun-04 | 11:52 | 0.37 | 59 | |
| 35.477 | 121.019 | Central CA | F | 2.3 km NW of Point Estero | 25-Jun-04 | 11:52 | 0.37 | 37 | |
| 35.473 | 121.015 | Central CA | F | 1.8 km NW of Point Estero | 25-Jun-04 | 11:52 | 0.37 | 33 | |
| 35.463 | 120.992 | Central CA | F | China Harbor | 25-Jun-04 | 11:55 | 0.37 | 4 | |
| 35.462 | 120.990 | Central CA | F | Vicinity of China Harbor | 25-Jun-04 | 11:56 | 0.37 | 64 | 1 |
| 35.462 | 121.005 | Central CA | F | Point Estero | 25-Jun-04 | 11:53 | 0.37 | 26 | |
| 35.461 | 120.987 | Central CA | F | Vicinity of China Harbor | 25-Jun-04 | 11:56 | 0.37 | 18 | |
| 35.454 | 120.961 | Central CA | F | 2.0 km WNW of Cayucos Point | 25-Jun-04 | 11:56 | 0.37 | 104 | |
| 35.450 | 120.953 | Central CA | F | 1.2 km WNW of Cayucos Point | 25-Jun-04 | 12:11 | 0.40 | 56 | |
| 35.448 | 120.916 | Central CA | F | 0.9 km W of Cayucos Pier | 25-Jun-04 | 12:13 | 0.43 | 25 | |
| 35.447 | 120.925 | Central CA | F | 1.5 km W of Cayucos Pier | 25-Jun-04 | 12:13 | 0.43 | 11 | |
| 35.446 | 120.939 | Central CA | F | Cayucos Point | 25-Jun-04 | 12:13 | 0.43 | 14 | |
| 35.446 | 120.949 | Central CA | F | 0.8 km W of Cayucos Point | 25-Jun-04 | 12:11 | 0.40 | 16 | |
| 35.446 | 120.947 | Central CA | F | 0.6 km W of Cayucos Point | 25-Jun-04 | 12:11 | 0.40 | 14 | |
| 35.446 | 120.944 | Central CA | F | Cayucos Point | 25-Jun-04 | 12:13 | 0.43 | 2 | |
| 35.446 | 120.943 | Central CA | F | Cayucos Point | 25-Jun-04 | 12:13 | 0.43 | 42 | |
| 35.342 | 120.847 | Central CA | F | Morro Bay estuary | 25-Jun-04 | 12:18 | 0.31 | 49 | |
| 35.238 | 120.888 | Central CA | F | 2.3 km SSE of Point Buchon | 25-Jun-04 | 12:25 | 0.49 | 15 | |
| 35.237 | 120.887 | Central CA | F | 2.3 km SSE of Point Buchon | 25-Jun-04 | 12:22 | 0.46 | 32 | |
| 35.224 | 120.874 | Central CA | F | 2.1 km NW of Diablo Canyon Power Plant | 25-Jun-04 | 12:25 | 0.49 | 101 | |
| 35.204 | 120.848 | Central CA | F | 1.1 km SE of Diablo Canyon Power Plant | 25-Jun-04 | 12:26 | 0.49 | 8 | |
| 35.200 | 120.840 | Central CA | F | 1.9 km SE of Diablo Canyon Power Plant | 25-Jun-04 | 12:27 | 0.49 | 50 | |
| 35.198 | 120.838 | Central CA | F | 2.2 km SE of Diablo Canyon Power Plant | 25-Jun-04 | 12:27 | 0.49 | 56 | |
| 35.198 | 120.837 | Central CA | F | 2.2 km SE of Diablo Canyon Power Plant | 25-Jun-04 | 12:27 | 0.49 | 12 | |
| 35.195 | 120.828 | Central CA | F | 3.2 km SE of Diablo Canyon Power Plant | 25-Jun-04 | 12:27 | 0.49 | 36 | |
| 35.190 | 120.817 | Central CA | F | 4.3 km SE of Diablo Canyon Power Plant | 25-Jun-04 | 12:27 | 0.49 | 33 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|-----------------------|---|-----------|--------------|-----------------|------------------------|-------------------------|
| 35.178 | 120.741 | Central CA | F | 1.5 km WNW of Fossil Point, San Luis Obispo Bay | 22-Jun-04 | 9:47 | 0.06 | 62 | 2 |
| 35.174 | 120.718 | Central CA | F | Lone Rock, San Luis Obispo Bay | 22-Jun-04 | 9:46 | 0.06 | 16 | 1 |
| 35.173 | 120.704 | Central CA | F | 1.9 km E of Fossil Point, San Luis Obispo Bay | 22-Jun-04 | 9:46 | 0.06 | 12 | |
| 35.152 | 120.672 | Central CA | F | Vicinity of South Point, Shell Beach | 22-Jun-04 | 9:42 | 0.06 | 33 | |
| 35.152 | 120.669 | Central CA | F | Vicinity of South Point, Shell Beach | 22-Jun-04 | 9:41 | 0.06 | 12 | |
| 35.151 | 120.670 | Central CA | F | Vicinity of South Point, Shell Beach | 22-Jun-04 | 9:41 | 0.06 | 14 | 1 |
| 35.151 | 120.669 | Central CA | F | Vicinity of South Point, Shell Beach | 22-Jun-04 | 9:41 | 0.06 | 9 | 1 |
| 35.150 | 120.658 | Central CA | F | Pismo Beach | 22-Jun-04 | 9:40 | 0.06 | 14 | |
| 35.149 | 120.655 | Central CA | F | Pismo Beach | 22-Jun-04 | 9:40 | 0.06 | 6 | |
| 34.929 | 120.666 | Southern CA | E | Mussel Point | 18-May-04 | 15:26 | 0.52 | 26 | |
| 34.901 | 120.668 | Southern CA | E | 0.4 km SE Point Sal | 18-May-04 | 15:24 | 0.52 | 9 | |
| 34.901 | 120.667 | Southern CA | E | 0.5 km SE Point Sal | 18-May-04 | 15:24 | 0.52 | 1 | |
| 34.865 | 120.617 | Southern CA | E | 6.4 km SE of Point Sal | 18-May-04 | 15:20 | 0.52 | 14 | |
| 34.756 | 120.640 | Southern CA | D | Purisima Point | 18-May-04 | 15:13 | 0.55 | 14 | |
| 34.738 | 120.626 | Southern CA | D | 2.3 SSE of Purisima Point | 18-May-04 | 15:10 | 0.55 | 44 | |
| 34.562 | 120.635 | Southern CA | D | 0.5 km ESE of Rocky Point | 18-May-04 | 15:03 | 0.55 | 4 | |
| 34.560 | 120.631 | Southern CA | D | 0.9 km ESE of Rocky Point | 18-May-04 | 15:01 | 0.55 | 74 | |
| 34.560 | 120.631 | Southern CA | D | 0.9 km ESE of Rocky Point | 18-May-04 | 15:01 | 0.55 | 106 | |
| 34.559 | 120.629 | Southern CA | D | 1.1 km ESE of Rocky Point | 18-May-04 | 15:03 | 0.55 | 4 | |
| 34.453 | 120.475 | Southern CA | D | Point Conception | 18-May-04 | 14:53 | 0.55 | 54 | |
| 34.450 | 120.468 | Southern CA | D | Point Conception | 18-May-04 | 14:49 | 0.61 | 289 | |
| 34.449 | 120.466 | Southern CA | D | Point Conception | 18-May-04 | 14:49 | 0.61 | 19 | |
| 34.449 | 120.466 | Southern CA | D | Point Conception | 18-May-04 | 14:49 | 0.61 | 12 | |
| 34.449 | 120.470 | Southern CA | D | Point Conception | 18-May-04 | 14:49 | 0.61 | 85 | |
| 34.435 | 119.943 | Southern CA | D | 6.6 km WNW of Coal Oil Point | 18-May-04 | 14:28 | 0.64 | 36 | 5 |
| 34.385 | 119.506 | Southern CA | D | 2.9 km WNW of Rincon Point, Carpinteria | 18-May-04 | 14:12 | 0.67 | 125 | |
| 34.102 | 119.097 | Southern CA | D | Mugu Lagoon | 18-May-04 | 13:53 | 0.61 | 407 | 1 |
| 32.849 | 117.277 | Southern CA | A | La Jolla | 19-May-04 | 15:21 | 0.55 | 35 | |
| 32.848 | 117.279 | Southern CA | A | La Jolla | 19-May-04 | 15:21 | 0.55 | 86 | |
| 33.303 | 118.339 | Southern CA | Santa Catalina Island | 1.3 km WNW of Church Rock | 19-May-04 | 14:30 | 0.43 | 28 | |
| 33.308 | 118.348 | Southern CA | Santa Catalina Island | 2.3 km WNW of Church Rock | 19-May-04 | 14:31 | 0.43 | 2 | |
| 33.336 | 118.472 | Southern CA | Santa Catalina Island | Vicinity of China Point | 19-May-04 | 14:35 | 0.43 | 129 | |
| 33.330 | 118.467 | Southern CA | Santa Catalina Island | China Point | 19-May-04 | 14:35 | 0.43 | 23 | |
| 33.434 | 118.555 | Southern CA | Santa Catalina Island | Vicinity of Whale Rock | 19-May-04 | 14:42 | 0.46 | 11 | |
| 33.480 | 119.049 | Southern CA | Santa Barbara Island | Webster Point | 19-May-04 | 12:59 | 0.79 | 12 | |
| 33.220 | 119.442 | Southern CA | San Nicolas Island | East Daytona Beach | 19-May-04 | 13:17 | 0.76 | 13 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|---------------------|---|-----------|--------------|-----------------|------------------------|-------------------------|
| 33.216 | 119.456 | Southern CA | San Nicolas Island | West Daytona Beach | 19-May-04 | 13:19 | 0.76 | 12 | |
| 33.216 | 119.457 | Southern CA | San Nicolas Island | West Daytona Beach | 19-May-04 | 13:19 | 0.76 | 55 | |
| 33.216 | 119.476 | Southern CA | San Nicolas Island | Flat Rock | 19-May-04 | 13:28 | 0.73 | 24 | |
| 33.216 | 119.466 | Southern CA | San Nicolas Island | Flat Rock | 19-May-04 | 13:28 | 0.73 | 6 | |
| 33.215 | 119.474 | Southern CA | San Nicolas Island | Flat Rock | 19-May-04 | 13:28 | 0.73 | 46 | |
| 33.216 | 119.467 | Southern CA | San Nicolas Island | Flat Rock | 19-May-04 | 13:28 | 0.73 | 2 | |
| 33.216 | 119.475 | Southern CA | San Nicolas Island | Flat Rock | 19-May-04 | 13:28 | 0.73 | 25 | |
| 33.215 | 119.473 | Southern CA | San Nicolas Island | Flat Rock | 19-May-04 | 13:28 | 0.73 | 56 | |
| 33.223 | 119.512 | Southern CA | San Nicolas Island | 1.6 km WNW of South Marker Poles Point | 19-May-04 | 13:33 | 0.73 | 54 | |
| 33.240 | 119.554 | Southern CA | San Nicolas Island | Beach SSE of Sea Lion Cove | 19-May-04 | 13:36 | 0.70 | 1 | |
| 33.244 | 119.559 | Southern CA | San Nicolas Island | Sea Lion Cove | 19-May-04 | 13:37 | 0.70 | 5 | |
| 33.243 | 119.557 | Southern CA | San Nicolas Island | Beach SSE of Sea Lion Cove | 19-May-04 | 13:37 | 0.70 | 16 | |
| 33.273 | 119.576 | Southern CA | San Nicolas Island | Vizcaino Point | 19-May-04 | 13:38 | 0.70 | 18 | |
| 33.273 | 119.566 | Southern CA | San Nicolas Island | Vizcaino Point, Rocks NW of Red Eye Beach | 19-May-04 | 13:41 | 0.70 | 83 | |
| 33.273 | 119.565 | Southern CA | San Nicolas Island | Vizcaino Point, Rocks NW of Red Eye Beach | 19-May-04 | 13:41 | 0.70 | 62 | |
| 33.279 | 119.546 | Southern CA | San Nicolas Island | West end of Tender Beach | 19-May-04 | 13:43 | 0.70 | 5 | |
| 33.283 | 119.525 | Southern CA | San Nicolas Island | Pirates Cove | 19-May-04 | 13:45 | 0.70 | 31 | |
| 33.282 | 119.523 | Southern CA | San Nicolas Island | 0.2 km ESE Pirates Cove | 19-May-04 | 13:45 | 0.70 | 11 | |
| 33.279 | 119.518 | Southern CA | San Nicolas Island | Corral Harbor | 19-May-04 | 13:45 | 0.70 | 87 | |
| 33.272 | 119.506 | Southern CA | San Nicolas Island | Vicinity of Corral Harbor | 19-May-04 | 13:46 | 0.70 | 63 | |
| 33.269 | 119.501 | Southern CA | San Nicolas Island | Vicinity of Corral Harbor | 19-May-04 | 13:46 | 0.70 | 4 | |
| 33.245 | 119.448 | Southern CA | San Nicolas Island | West Coast Guard Beach | 19-May-04 | 13:51 | 0.70 | 105 | |
| 32.874 | 118.508 | Southern CA | San Clemente Island | 1.7 km SSE of Mail Point | 1-Jun-04 | 13:35 | 0.40 | 24 | |
| 33.038 | 118.591 | Southern CA | San Clemente Island | Northwest Harbor Islet | 1-Jun-04 | 13:57 | 0.40 | 5 | |
| 32.833 | 118.465 | Southern CA | San Clemente Island | 4.0 km SE of Lost Point | 1-Jun-04 | 14:09 | 0.40 | 45 | |
| 32.833 | 118.464 | Southern CA | San Clemente Island | 4.1 km SE of Lost Point | 1-Jun-04 | 14:09 | 0.40 | 7 | |
| 32.803 | 118.431 | Southern CA | San Clemente Island | China Point | 1-Jun-04 | 14:13 | 0.40 | 4 | |
| 32.819 | 118.370 | Southern CA | San Clemente Island | Pyramid Cove | 1-Jun-04 | 14:18 | 0.40 | 1 | |
| 32.817 | 118.356 | Southern CA | San Clemente Island | Pyramid Head | 1-Jun-04 | 14:18 | 0.40 | 18 | |
| 34.022 | 120.124 | Southern CA | Santa Rosa Island | 2.2 km E of Brockway Point | 2-Jun-04 | 15:25 | 0.58 | 20 | |
| 34.020 | 120.115 | Southern CA | Santa Rosa Island | 3.1 km E of Brockway Point | 2-Jun-04 | 15:25 | 0.58 | 141 | |
| 34.020 | 120.114 | Southern CA | Santa Rosa Island | 3.1 km E of Brockway Point | 2-Jun-04 | 15:25 | 0.58 | 41 | |
| 34.025 | 120.141 | Southern CA | Santa Rosa Island | 0.6 km ENE of Brockway Point | 2-Jun-04 | 15:27 | 0.58 | 17 | |
| 34.023 | 120.127 | Southern CA | Santa Rosa Island | 1.9 km E of Brockway Point | 2-Jun-04 | 15:27 | 0.58 | 1 | |
| 34.008 | 120.235 | Southern CA | Santa Rosa Island | 1.6 km NE of Sandy Point | 2-Jun-04 | 15:32 | 0.58 | 9 | |
| 34.000 | 120.246 | Southern CA | Santa Rosa Island | Sandy Point | 2-Jun-04 | 16:16 | 0.67 | 1 | |
| 33.999 | 120.243 | Southern CA | Santa Rosa Island | Vicinity of Sandy Point | 2-Jun-04 | 16:17 | 0.67 | 11 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|-------------------|-----------------------------|----------|--------------|-----------------|------------------------|-------------------------|
| 33.998 | 120.241 | Southern CA | Santa Rosa Island | Vicinity of Sandy Point | 2-Jun-04 | 16:17 | 0.67 | 48 | |
| 33.997 | 120.239 | Southern CA | Santa Rosa Island | Vicinity of Sandy Point | 2-Jun-04 | 16:17 | 0.67 | 144 | |
| 33.996 | 120.239 | Southern CA | Santa Rosa Island | Vicinity of Sandy Point | 2-Jun-04 | 16:17 | 0.67 | 160 | |
| 33.995 | 120.238 | Southern CA | Santa Rosa Island | Vicinity of Sandy Point | 2-Jun-04 | 16:20 | 0.67 | 58 | |
| 33.983 | 120.221 | Southern CA | Santa Rosa Island | 3.4 km ESE of Sandy Point | 2-Jun-04 | 16:22 | 0.67 | 10 | |
| 33.980 | 120.219 | Southern CA | Santa Rosa Island | 3.7 km ESE of Sandy Point | 2-Jun-04 | 16:22 | 0.67 | 14 | |
| 33.978 | 120.217 | Southern CA | Santa Rosa Island | 4.0 km ESE of Sandy Point | 2-Jun-04 | 16:24 | 0.67 | 7 | |
| 33.976 | 120.214 | Southern CA | Santa Rosa Island | 4.4 km ESE of Sandy Point | 2-Jun-04 | 16:24 | 0.67 | 71 | |
| 33.911 | 120.150 | Southern CA | Santa Rosa Island | 3.1 km ESE of Cluster Point | 2-Jun-04 | 16:30 | 0.70 | 25 | |
| 33.911 | 120.149 | Southern CA | Santa Rosa Island | 3.4 km ESE of Cluster Point | 2-Jun-04 | 16:30 | 0.70 | 5 | |
| 33.910 | 120.147 | Southern CA | Santa Rosa Island | 3.4 km ESE of Cluster Point | 2-Jun-04 | 16:30 | 0.70 | 42 | |
| 33.907 | 120.143 | Southern CA | Santa Rosa Island | 3.9 km ESE of Cluster Point | 2-Jun-04 | 16:31 | 0.70 | 3 | |
| 33.925 | 120.036 | Southern CA | Santa Rosa Island | 1.5 km NE of Ford Point | 2-Jun-04 | 16:34 | 0.70 | 35 | |
| 33.925 | 120.036 | Southern CA | Santa Rosa Island | 1.5 km NE of Ford Point | 2-Jun-04 | 16:34 | 0.70 | 23 | |
| 33.930 | 120.024 | Southern CA | Santa Rosa Island | 2.7 km NE of Ford Point | 2-Jun-04 | 16:36 | 0.73 | 11 | |
| 33.930 | 120.025 | Southern CA | Santa Rosa Island | 2.7 km NE of Ford Point | 2-Jun-04 | 16:36 | 0.73 | 39 | |
| 33.928 | 120.029 | Southern CA | Santa Rosa Island | 2.3 km NE of Ford Point | 2-Jun-04 | 16:36 | 0.73 | 28 | |
| 33.926 | 120.033 | Southern CA | Santa Rosa Island | 1.8 km NE of Ford Point | 2-Jun-04 | 16:36 | 0.73 | 8 | |
| 34.031 | 120.310 | Southern CA | San Miguel Island | Cardwell Point | 2-Jun-04 | 15:35 | 0.52 | 48 | |
| 34.030 | 120.308 | Southern CA | San Miguel Island | Cardwell Point | 2-Jun-04 | 15:35 | 0.52 | 8 | |
| 34.028 | 120.307 | Southern CA | San Miguel Island | Cardwell Point | 2-Jun-04 | 15:35 | 0.52 | 4 | |
| 34.026 | 120.307 | Southern CA | San Miguel Island | Cardwell Point | 2-Jun-04 | 15:38 | 0.52 | 1 | |
| 34.022 | 120.308 | Southern CA | San Miguel Island | Cardwell Point | 2-Jun-04 | 15:38 | 0.52 | 2 | |
| 34.045 | 120.326 | Southern CA | San Miguel Island | Hoffman Point | 2-Jun-04 | 15:39 | 0.52 | 182 | |
| 34.061 | 120.358 | Southern CA | San Miguel Island | 0.3 km NW of Bat Rock | 2-Jun-04 | 15:42 | 0.52 | 57 | |
| 34.070 | 120.362 | Southern CA | San Miguel Island | Harbor Seal Cove | 2-Jun-04 | 15:43 | 0.52 | 1 | |
| 34.068 | 120.362 | Southern CA | San Miguel Island | Harbor Seal Cove | 2-Jun-04 | 15:43 | 0.52 | 6 | |
| 34.074 | 120.362 | Southern CA | San Miguel Island | Harris Point | 2-Jun-04 | 15:44 | 0.52 | 12 | |
| 34.055 | 120.414 | Southern CA | San Miguel Island | Oil Point | 2-Jun-04 | 15:46 | 0.55 | 6 | |
| 34.055 | 120.415 | Southern CA | San Miguel Island | Oil Point | 2-Jun-04 | 15:46 | 0.55 | 4 | |
| 34.054 | 120.412 | Southern CA | San Miguel Island | Otter Harbor | 2-Jun-04 | 15:46 | 0.52 | 1 | |
| 34.052 | 120.408 | Southern CA | San Miguel Island | West end of Simonton Cove | 2-Jun-04 | 15:46 | 0.52 | 19 | |
| 34.052 | 120.407 | Southern CA | San Miguel Island | West end of Simonton Cove | 2-Jun-04 | 15:46 | 0.52 | 29 | |
| 34.052 | 120.406 | Southern CA | San Miguel Island | West end of Simonton Cove | 2-Jun-04 | 15:46 | 0.52 | 17 | |
| 34.051 | 120.405 | Southern CA | San Miguel Island | West end of Simonton Cove | 2-Jun-04 | 15:46 | 0.52 | 9 | |
| 34.054 | 120.417 | Southern CA | San Miguel Island | Oil Point | 2-Jun-04 | 15:48 | 0.55 | 33 | |
| 34.052 | 120.410 | Southern CA | San Miguel Island | West end of Simonton Cove | 2-Jun-04 | 15:48 | 0.55 | 1 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|-------------------|---|----------|--------------|-----------------|------------------------|-------------------------|
| 34.056 | 120.414 | Southern CA | San Miguel Island | Oil Point | 2-Jun-04 | 15:50 | 0.55 | 7 | |
| 34.032 | 120.454 | Southern CA | San Miguel Island | Point Bennett | 2-Jun-04 | 15:54 | 0.55 | 13 | |
| 34.029 | 120.419 | Southern CA | San Miguel Island | Leuzarder Point, Tyler Bight | 2-Jun-04 | 15:56 | 0.55 | 14 | |
| 34.026 | 120.391 | Southern CA | San Miguel Island | 3.4 km WNW of Crook Point | 2-Jun-04 | 15:58 | 0.55 | 18 | |
| 34.025 | 120.389 | Southern CA | San Miguel Island | 3.2 km WNW of Crook Point | 2-Jun-04 | 15:58 | 0.55 | 50 | |
| 34.025 | 120.388 | Southern CA | San Miguel Island | 3.0 km WNW of Crook Point | 2-Jun-04 | 15:58 | 0.55 | 5 | |
| 34.021 | 120.377 | Southern CA | San Miguel Island | 1.9 km WNW of Crook Point | 2-Jun-04 | 15:58 | 0.55 | 3 | |
| 34.019 | 120.374 | Southern CA | San Miguel Island | 1.5 km WNW of Crook Point | 2-Jun-04 | 16:01 | 0.55 | 56 | |
| 34.018 | 120.373 | Southern CA | San Miguel Island | 1.5 km WNW of Crook Point | 2-Jun-04 | 16:01 | 0.55 | 1 | |
| 34.014 | 120.361 | Southern CA | San Miguel Island | Crook Point | 2-Jun-04 | 16:03 | 0.55 | 46 | |
| 34.016 | 120.358 | Southern CA | San Miguel Island | Crook Point | 2-Jun-04 | 16:06 | 0.55 | 119 | |
| 34.020 | 120.349 | Southern CA | San Miguel Island | South East Beach | 2-Jun-04 | 16:09 | 0.58 | 47 | |
| 34.019 | 120.327 | Southern CA | San Miguel Island | South East Beach | 2-Jun-04 | 16:09 | 0.58 | 29 | |
| 34.019 | 120.324 | Southern CA | San Miguel Island | South East Beach | 2-Jun-04 | 16:09 | 0.58 | 3 | |
| 34.018 | 120.356 | Southern CA | San Miguel Island | Crook Point | 2-Jun-04 | 16:09 | 0.58 | 9 | |
| 34.019 | 120.321 | Southern CA | San Miguel Island | South East Beach | 2-Jun-04 | 16:10 | 0.58 | 57 | |
| 34.019 | 120.321 | Southern CA | San Miguel Island | South East Beach | 2-Jun-04 | 16:10 | 0.58 | 26 | |
| 34.019 | 120.315 | Southern CA | San Miguel Island | Cardwell Point | 2-Jun-04 | 16:10 | 0.58 | 22 | |
| 34.020 | 120.310 | Southern CA | San Miguel Island | Cardwell Point | 2-Jun-04 | 16:12 | 0.58 | 32 | |
| 34.019 | 120.316 | Southern CA | San Miguel Island | South East Beach | 2-Jun-04 | 16:12 | 0.58 | 7 | |
| 34.000 | 119.884 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:06 | 0.55 | 22 | |
| 34.016 | 119.644 | Southern CA | Santa Cruz Island | Between Chinese Harbor and Prisoners Harbor | 3-Jun-04 | 15:15 | 0.58 | 33 | |
| 34.019 | 119.653 | Southern CA | Santa Cruz Island | Between Chinese Harbor and Prisoners Harbor | 3-Jun-04 | 15:17 | 0.58 | 38 | |
| 34.048 | 119.730 | Southern CA | Santa Cruz Island | Platts Harbor | 3-Jun-04 | 15:19 | 0.58 | 9 | |
| 34.056 | 119.797 | Southern CA | Santa Cruz Island | Vicinity of Arch Rock | 3-Jun-04 | 15:24 | 0.58 | 51 | |
| 34.055 | 119.798 | Southern CA | Santa Cruz Island | Vicinity of Arch Rock | 3-Jun-04 | 15:25 | 0.58 | 56 | |
| 34.063 | 119.834 | Southern CA | Santa Cruz Island | 2.5 km ESE Profile Point | 3-Jun-04 | 15:27 | 0.58 | 5 | |
| 34.068 | 119.922 | Southern CA | Santa Cruz Island | 1.0 km S West Point | 3-Jun-04 | 15:32 | 0.58 | 14 | |
| 34.067 | 119.921 | Southern CA | Santa Cruz Island | 1.1 km S West Point | 3-Jun-04 | 15:32 | 0.58 | 21 | |
| 34.008 | 119.887 | Southern CA | Santa Cruz Island | Klinton Point | 3-Jun-04 | 15:38 | 0.55 | 40 | |
| 34.008 | 119.887 | Southern CA | Santa Cruz Island | Klinton Point | 3-Jun-04 | 15:38 | 0.55 | 4 | |
| 34.007 | 119.886 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:38 | 0.55 | 14 | |
| 34.006 | 119.885 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:38 | 0.55 | 78 | |
| 34.006 | 119.886 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:38 | 0.55 | 15 | |
| 34.004 | 119.885 | Southern CA | Santa Cruz Island | Klinton Point | 3-Jun-04 | 15:38 | 0.55 | 43 | |
| 34.002 | 119.884 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:38 | 0.55 | 36 | |
| 34.000 | 119.883 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:45 | 0.55 | 19 | |

Appendix 1. (Continued)

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|-------------------|--|----------|--------------|-----------------|------------------------|-------------------------|
| 33.998 | 119.883 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:45 | 0.55 | 120 | |
| 33.996 | 119.881 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:46 | 0.55 | 125 | |
| 33.994 | 119.880 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:46 | 0.55 | 97 | |
| 33.991 | 119.880 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:46 | 0.55 | 78 | |
| 33.990 | 119.879 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:46 | 0.55 | 3 | |
| 33.989 | 119.878 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 3-Jun-04 | 15:50 | 0.55 | 5 | |
| 33.977 | 119.682 | Southern CA | Santa Cruz Island | 4.1 km NE of Bowen Point | 3-Jun-04 | 16:01 | 0.55 | 5 | |
| 33.989 | 119.595 | Southern CA | Santa Cruz Island | 3.1 km WSW of Sandstone Point | 3-Jun-04 | 16:04 | 0.55 | 150 | |
| 33.992 | 119.586 | Southern CA | Santa Cruz Island | 2.5 km WSW of Sandstone Point | 3-Jun-04 | 16:06 | 0.55 | 21 | |
| 34.011 | 119.434 | Southern CA | Anacapa Island | South shore of West (Anacapa) Island | 3-Jun-04 | 16:11 | 0.55 | 10 | |
| 34.010 | 119.433 | Southern CA | Anacapa Island | South shore of West (Anacapa) Island | 3-Jun-04 | 16:11 | 0.55 | 12 | |
| 34.008 | 119.426 | Southern CA | Anacapa Island | South shore of West (Anacapa) Island | 3-Jun-04 | 16:11 | 0.55 | 81 | |
| 34.005 | 119.421 | Southern CA | Anacapa Island | E of Cat Rock Point, West (Anacapa) Island | 3-Jun-04 | 16:12 | 0.58 | 12 | |
| 34.005 | 119.420 | Southern CA | Anacapa Island | E of Cat Rock Point, West (Anacapa) Island | 3-Jun-04 | 16:13 | 0.58 | 23 | |
| 34.004 | 119.401 | Southern CA | Anacapa Island | SW Middle (Anacapa) Island | 3-Jun-04 | 16:15 | 0.58 | 35 | |

^aGPS malfunctioned during survey, positions and locations of haulout sites were approximated.

^bSE Farallon Islands are included in stratum K (latitude segments 37.50° to 37.99°).

Appendix 2. Counts of harbor seals (*Phoca vitulina*) by biologists on the ground at Southeast Farallon Islands or that were obtained from 126-mm-format aerial color photographs taken at haulout sites in California during 20 May to 18 July 2004 at haulout sites found for coastline where replicate survey coverage occurred. GPS Data Format Deg NAD83.

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|-------------------|--|-----------|--------------|-----------------|------------------------|-------------------------|
| 4.014 | 119.419 | Southern CA | Anacapa Island | N West (Anacapa) Island | 5/20/2004 | 13:21 | 0.73 | 1 | |
| 34.010 | 119.433 | Southern CA | Anacapa Island | South shore of West (Anacapa) Island | 5/20/2004 | 16:03 | 0.64 | 14 | |
| 34.011 | 119.436 | Southern CA | Anacapa Island | South shore of West (Anacapa) Island | 5/20/2004 | 16:05 | 0.64 | 23 | |
| 34.009 | 119.429 | Southern CA | Anacapa Island | South shore of West (Anacapa) Island | 5/20/2004 | 16:05 | 0.64 | 8 | |
| 34.008 | 119.426 | Southern CA | Anacapa Island | South shore of West (Anacapa) Island | 5/20/2004 | 16:05 | 0.64 | 81 | |
| 34.006 | 119.421 | Southern CA | Anacapa Island | E of Cat Rock Point, West (Anacapa) Island | 5/20/2004 | 16:05 | 0.64 | 10 | |
| 34.006 | 119.421 | Southern CA | Anacapa Island | E of Cat Rock Point, West (Anacapa) Island | 5/20/2004 | 16:05 | 0.64 | 16 | |
| 34.006 | 119.419 | Southern CA | Anacapa Island | E of Cat Rock Point, West (Anacapa) Island | 5/20/2004 | 16:09 | 0.64 | 1 | |
| 34.003 | 119.398 | Southern CA | Anacapa Island | S Middle (Anacapa) Island | 5/20/2004 | 16:09 | 0.64 | 8 | |
| 34.031 | 120.309 | Southern CA | San Miguel Island | Cardwell Point | 5/20/2004 | 14:15 | 0.79 | 6 | |
| 34.031 | 120.310 | Southern CA | San Miguel Island | Cardwell Point | 5/20/2004 | 14:15 | 0.79 | 18 | |
| 34.045 | 120.327 | Southern CA | San Miguel Island | Hoffman Point | 5/20/2004 | 14:22 | 0.79 | 65 | |
| 34.062 | 120.358 | Southern CA | San Miguel Island | 0.4 km NW of Bat Rock | 5/20/2004 | 14:25 | 0.79 | 48 | |
| 34.063 | 120.358 | Southern CA | San Miguel Island | 0.5 km NW of Bat Rock | 5/20/2004 | 14:25 | 0.79 | 39 | |
| 34.067 | 120.361 | Southern CA | San Miguel Island | Harbor Seal Cove | 5/20/2004 | 14:25 | 0.79 | 4 | |
| 34.068 | 120.362 | Southern CA | San Miguel Island | Harbor Seal Cove | 5/20/2004 | 14:25 | 0.79 | 3 | |
| 34.067 | 120.360 | Southern CA | San Miguel Island | Harbor Seal Cove | 5/20/2004 | 14:25 | 0.79 | 25 | |
| 34.075 | 120.366 | Southern CA | San Miguel Island | Harris Point | 5/20/2004 | 14:30 | 0.79 | 2 | |
| 34.075 | 120.363 | Southern CA | San Miguel Island | Harris Point | 5/20/2004 | 14:31 | 0.79 | 1 | |
| 34.051 | 120.404 | Southern CA | San Miguel Island | West end of Simonton Cove | 5/20/2004 | 14:32 | 0.76 | 1 | |
| 34.053 | 120.411 | Southern CA | San Miguel Island | Otter Harbor | 5/20/2004 | 14:33 | 0.76 | 2 | |
| 34.054 | 120.416 | Southern CA | San Miguel Island | Oil Point | 5/20/2004 | 14:33 | 0.76 | 10 | |
| 34.052 | 120.408 | Southern CA | San Miguel Island | West end of Simonton Cove | 5/20/2004 | 14:35 | 0.76 | 52 | |
| 34.052 | 120.406 | Southern CA | San Miguel Island | West end of Simonton Cove | 5/20/2004 | 14:35 | 0.76 | 27 | |
| 34.056 | 120.414 | Southern CA | San Miguel Island | Oil Point | 5/20/2004 | 14:40 | 0.76 | 12 | |
| 34.031 | 120.452 | Southern CA | San Miguel Island | Point Bennett | 5/20/2004 | 14:41 | 0.76 | 17 | |
| 34.028 | 120.419 | Southern CA | San Miguel Island | Leuzarder Point | 5/20/2004 | 14:45 | 0.76 | 1 | |
| 34.026 | 120.390 | Southern CA | San Miguel Island | 3.3 km WNW of Crook Point | 5/20/2004 | 14:46 | 0.76 | 14 | |
| 34.019 | 120.373 | Southern CA | San Miguel Island | 1.5 km WNW of Crook Point | 5/20/2004 | 14:46 | 0.76 | 30 | |
| 34.018 | 120.372 | Southern CA | San Miguel Island | 1.5 km WNW of Crook Point | 5/20/2004 | 14:46 | 0.76 | 1 | |
| 34.015 | 120.360 | Southern CA | San Miguel Island | Crook Point | 5/20/2004 | 14:47 | 0.76 | 23 | |
| 34.016 | 120.358 | Southern CA | San Miguel Island | Crook Point | 5/20/2004 | 14:49 | 0.76 | 50 | |
| 34.017 | 120.357 | Southern CA | San Miguel Island | Crook Point | 5/20/2004 | 14:51 | 0.73 | 5 | |
| 34.019 | 120.350 | Southern CA | San Miguel Island | 0.9 km NE of Crook Point | 5/20/2004 | 14:53 | 0.73 | 24 | |
| 34.020 | 120.332 | Southern CA | San Miguel Island | South East Beach | 5/20/2004 | 15:01 | 0.73 | 1 | |
| 34.020 | 120.327 | Southern CA | San Miguel Island | South East Beach | 5/20/2004 | 15:01 | 0.73 | 7 | |
| 34.019 | 120.323 | Southern CA | San Miguel Island | South East Beach | 5/20/2004 | 15:01 | 0.73 | 2 | |
| 34.019 | 120.320 | Southern CA | San Miguel Island | South East Beach | 5/20/2004 | 15:01 | 0.73 | 10 | |

Appendix 2. (Continued).

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|-------------------|---|-----------|--------------|-----------------|------------------------|-------------------------|
| 34.019 | 120.317 | Southern CA | San Miguel Island | South East Beach | 5/20/2004 | 15:01 | 0.73 | 3 | |
| 34.020 | 120.315 | Southern CA | San Miguel Island | South East Beach | 5/20/2004 | 15:01 | 0.73 | 5 | |
| 34.020 | 120.311 | Southern CA | San Miguel Island | Cardwell Point | 5/20/2004 | 15:01 | 0.73 | 13 | |
| 34.016 | 119.643 | Southern CA | Santa Cruz Island | Between Chinese Harbor and Prisoners Harbor | 5/20/2004 | 13:33 | 0.88 | 15 | |
| 34.019 | 119.656 | Southern CA | Santa Cruz Island | Between Chinese Harbor and Prisoners Harbor | 5/20/2004 | 13:33 | 0.88 | 24 | |
| 34.043 | 119.716 | Southern CA | Santa Cruz Island | Twin Harbors | 5/20/2004 | 13:39 | 0.88 | 1 | |
| 34.049 | 119.731 | Southern CA | Santa Cruz Island | Platts Harbor | 5/20/2004 | 13:41 | 0.88 | 15 | |
| 34.055 | 119.765 | Southern CA | Santa Cruz Island | Diablo Anchorage | 5/20/2004 | 13:44 | 0.85 | 14 | |
| 34.056 | 119.796 | Southern CA | Santa Cruz Island | Vicinity of Arch Rock | 5/20/2004 | 13:46 | 0.85 | 35 | |
| 34.055 | 119.798 | Southern CA | Santa Cruz Island | Vicinity of Arch Rock | 5/20/2004 | 13:46 | 0.85 | 20 | |
| 34.053 | 119.804 | Southern CA | Santa Cruz Island | Vicinity of Arch Rock | 5/20/2004 | 13:46 | 0.85 | 3 | |
| 34.058 | 119.826 | Southern CA | Santa Cruz Island | 3.4 km ESE Profile Point | 5/20/2004 | 13:47 | 0.85 | 6 | |
| 34.059 | 119.829 | Southern CA | Santa Cruz Island | 3.1 km ESE Profile Point | 5/20/2004 | 13:47 | 0.85 | 8 | |
| 34.068 | 119.851 | Southern CA | Santa Cruz Island | 0.8 km ESE Profile Point | 5/20/2004 | 13:48 | 0.85 | 4 | |
| 34.077 | 119.919 | Southern CA | Santa Cruz Island | West Point | 5/20/2004 | 13:50 | 0.85 | 6 | |
| 34.007 | 119.886 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:39 | 0.64 | 56 | |
| 33.999 | 119.883 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:41 | 0.64 | 45 | |
| 33.998 | 119.882 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:41 | 0.64 | 2 | |
| 33.997 | 119.882 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:41 | 0.64 | 33 | |
| 33.995 | 119.881 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:41 | 0.64 | 67 | |
| 33.994 | 119.881 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:41 | 0.64 | 37 | |
| 34.005 | 119.885 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:41 | 0.64 | 11 | |
| 34.004 | 119.884 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:41 | 0.64 | 5 | |
| 34.001 | 119.884 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:41 | 0.64 | 11 | |
| 34.001 | 119.883 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:41 | 0.64 | 3 | |
| 34.000 | 119.883 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:41 | 0.64 | 5 | |
| 33.992 | 119.880 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:42 | 0.64 | 41 | |
| 33.991 | 119.879 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:42 | 0.64 | 6 | |
| 33.990 | 119.878 | Southern CA | Santa Cruz Island | Vicinity of Klinton Point | 5/20/2004 | 15:42 | 0.64 | 2 | |
| 33.989 | 119.595 | Southern CA | Santa Cruz Island | 3.1 km WSW of Sandstone Point | 5/20/2004 | 15:58 | 0.64 | 16 | |
| 33.989 | 119.594 | Southern CA | Santa Cruz Island | 3.1 km WSW of Sandstone Point | 5/20/2004 | 15:58 | 0.64 | 64 | |
| 33.993 | 119.586 | Southern CA | Santa Cruz Island | 2.5 km WSW of Sandstone Point | 5/20/2004 | 15:59 | 0.64 | 44 | |
| 34.037 | 120.048 | Southern CA | Santa Rosa Island | Carrington Point | 5/20/2004 | 14:03 | 0.85 | 15 | |
| 34.037 | 120.050 | Southern CA | Santa Rosa Island | Carrington Point | 5/20/2004 | 14:03 | 0.85 | 4 | |
| 34.037 | 120.056 | Southern CA | Santa Rosa Island | Carrington Point | 5/20/2004 | 14:03 | 0.85 | 26 | |
| 34.020 | 120.114 | Southern CA | Santa Rosa Island | 3.1 km E of Brockway Point | 5/20/2004 | 14:05 | 0.85 | 35 | |
| 34.020 | 120.117 | Southern CA | Santa Rosa Island | 3.1 km E of Brockway Point | 5/20/2004 | 14:05 | 0.85 | 97 | |
| 34.025 | 120.141 | Southern CA | Santa Rosa Island | 0.6 km ENE of Brockway Point | 5/20/2004 | 14:07 | 0.85 | 28 | |
| 33.998 | 120.242 | Southern CA | Santa Rosa Island | Vicinity of Sandy Point | 5/20/2004 | 15:03 | 0.76 | 15 | |
| 33.996 | 120.239 | Southern CA | Santa Rosa Island | Vicinity of Sandy Point | 5/20/2004 | 15:03 | 0.76 | 40 | |
| 33.995 | 120.238 | Southern CA | Santa Rosa Island | Vicinity of Sandy Point | 5/20/2004 | 15:03 | 0.76 | 75 | |

Appendix 2. (Continued).

| Degrees latitude | Degrees longitude | Section | Stratum | Location of haulout site | Date | Time (hh:mm) | Tide height (m) | Count of seals onshore | Count of seals in water |
|------------------|-------------------|-------------|-------------------|-----------------------------|-----------|--------------|-----------------|------------------------|-------------------------|
| 34.002 | 120.250 | Southern CA | Santa Rosa Island | Sandy Point | 5/20/2004 | 15:03 | 0.76 | 4 | |
| 34.001 | 120.249 | Southern CA | Santa Rosa Island | Sandy Point | 5/20/2004 | 15:03 | 0.76 | 7 | |
| 34.000 | 120.247 | Southern CA | Santa Rosa Island | Sandy Point | 5/20/2004 | 15:03 | 0.76 | 1 | |
| 33.983 | 120.220 | Southern CA | Santa Rosa Island | 3.4 km ESE of Sandy Point | 5/20/2004 | 15:07 | 0.76 | 6 | |
| 33.980 | 120.219 | Southern CA | Santa Rosa Island | 3.7 km ESE of Sandy Point | 5/20/2004 | 15:07 | 0.76 | 28 | |
| 33.980 | 120.219 | Southern CA | Santa Rosa Island | 3.7 km ESE of Sandy Point | 5/20/2004 | 15:07 | 0.76 | 10 | |
| 33.978 | 120.217 | Southern CA | Santa Rosa Island | 4.0 km ESE of Sandy Point | 5/20/2004 | 15:09 | 0.73 | 3 | |
| 33.977 | 120.216 | Southern CA | Santa Rosa Island | 4.2 km ESE of Sandy Point | 5/20/2004 | 15:10 | 0.73 | 12 | |
| 33.976 | 120.214 | Southern CA | Santa Rosa Island | 4.4 km ESE of Sandy Point | 5/20/2004 | 15:10 | 0.73 | 35 | |
| 33.951 | 120.194 | Southern CA | Santa Rosa Island | 3.2 km ESE of Cluster Point | 5/20/2004 | 15:14 | 0.73 | 13 | |
| 33.950 | 120.192 | Southern CA | Santa Rosa Island | 3.0 km ESE of Cluster Point | 5/20/2004 | 15:14 | 0.73 | 1 | |
| 33.911 | 120.150 | Southern CA | Santa Rosa Island | 3.1 km ESE of Cluster Point | 5/20/2004 | 15:16 | 0.73 | 34 | |
| 33.911 | 120.149 | Southern CA | Santa Rosa Island | 3.2 km ESE of Cluster Point | 5/20/2004 | 15:16 | 0.73 | 7 | |
| 33.910 | 120.148 | Southern CA | Santa Rosa Island | 3.4 km ESE of Cluster Point | 5/20/2004 | 15:16 | 0.73 | 27 | |
| 33.925 | 120.035 | Southern CA | Santa Rosa Island | 1.6 km NE of Ford Point | 5/20/2004 | 15:19 | 0.73 | 23 | |
| 33.926 | 120.034 | Southern CA | Santa Rosa Island | 1.7 km NE of Ford Point | 5/20/2004 | 15:19 | 0.73 | 17 | |
| 33.928 | 120.029 | Southern CA | Santa Rosa Island | 2.3 km NE of Ford Point | 5/20/2004 | 15:19 | 0.73 | 20 | |
| 33.930 | 120.025 | Southern CA | Santa Rosa Island | 2.7 km NE of Ford Point | 5/20/2004 | 15:19 | 0.73 | 18 | |
| 33.931 | 120.024 | Southern CA | Santa Rosa Island | 2.8 km NE of Ford Point | 5/20/2004 | 15:19 | 0.73 | 4 | |
| 34.102 | 119.097 | Southern CA | D | Mugu Lagoon | 5/20/2004 | 16:25 | 0.70 | 396 | |
| 35.340 | 120.848 | Central CA | F | Morro Bay estuary | 6/23/2004 | 9:05 | 0.09 | 43 | |
| 35.449 | 120.915 | Central CA | F | 0.9 km W of Cayucos Pier | 6/23/2004 | 9:16 | 0.06 | 25 | |
| 35.447 | 120.923 | Central CA | F | 1.5 km W of Cayucos Pier | 6/23/2004 | 9:16 | 0.06 | 21 | |
| 35.446 | 120.939 | Central CA | F | Cayucos Point | 6/23/2004 | 9:16 | 0.06 | 62 | |
| 35.445 | 120.941 | Central CA | F | Cayucos Point | 6/23/2004 | 9:18 | 0.06 | 1 | |
| 35.709 | 121.312 | Central CA | G | Vicinity of La Cruz Rock | 6/23/2004 | 9:37 | 0.09 | 17 | |
| 35.699 | 121.300 | Central CA | G | 1.1 km NW of Arroyo del Oso | 6/23/2004 | 9:37 | 0.09 | 70 | |
| 35.699 | 121.299 | Central CA | G | 1.1 km NW of Arroyo del Oso | 6/23/2004 | 9:37 | 0.09 | 3 | |
| 35.697 | 121.297 | Central CA | G | 0.8 km NW of Arroyo del Oso | 6/23/2004 | 9:37 | 0.09 | 4 | |
| 35.735 | 121.319 | Central CA | G | 2.8 km SSE of Ragged Point | 6/23/2004 | 9:38 | 0.09 | 203 | 1 |
| 37.700 | 123.006 | Central CA | K ^a | Southeast Farallon Islands | 7/6/2004 | 10:50 | 0.03 | 149 | |
| 39.035 | 123.692 | Northern CA | N | Mouth of Mallo Pass Creek | 7/18/2004 | 9:16 | 0.27 | 71 | 5 |
| 39.049 | 123.694 | Northern CA | N | 10.4 km NNE of Point Arena | 7/18/2004 | 9:18 | 0.27 | 3 | |
| 39.048 | 123.694 | Northern CA | N | 10.4 km NNE of Point Arena | 7/18/2004 | 9:18 | 0.27 | 14 | 4 |
| 39.041 | 123.696 | Northern CA | N | 10.4 km NNE of Point Arena | 7/18/2004 | 9:18 | 0.27 | 20 | 2 |
| 39.051 | 123.692 | Northern CA | N | 11.3 km NNE of Point Arena | 7/18/2004 | 9:20 | 0.31 | 120 | 15 |

^aSE Farallon Islands are included in stratum K (latitude segments 37.50° to 37.99°).